

The Effects of Repeated Reading
and the Repeated Reading of Segmented Text
on Second Grade Students' Reading Fluency and Comprehension

by
Carol Lindsay Carver

A Thesis
Submitted to the Faculty of the Graduate School
of the University of Manitoba
in partial fulfillment of the requirements
for the degree of Master of Education
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THE EFFECTS OF REPEATED READING AND THE REPEATED READING
OF SEGMENTED TEXT ON SECOND GRADE STUDENTS' READING FLUENCY AND COMPREHENSION

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CAROL LINDSAY CARVER

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ABSTRACT

This study investigated the effects of repeated reading and the repeated reading of segmented text on oral reading performance and comprehension. Thirty grade two at and below grade level readers read short passages under one of three conditions: repeated reading (RR), repeated reading of segmented text (RR-S), or control. Results showed that when a composite index was employed to give weight to improvements in instructional level, the RR and RR-S groups had significantly higher scores in terms of: level of reading, word recognition accuracy, rate, and total number of ideas and number of main ideas recalled (uncued recall). RR-S was superior than RR only for cued recall. As would be predicted, students at grade level scored significantly higher for rate than students below grade level. When the cued recall scores of at and below grade level students within treatments were examined, at grade level students in the RR-S treatment group also scored significantly higher than below grade level students. In general, the repeated reading of naturally occurring text was as effective as the repeated reading of segmented text.

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Chapter 1

NATURE OF THE STUDY

Reading fluency is characterized by freedom from difficulties with word identification that might interfere with the comprehension of ideas. Fluent reading requires that readers possess a large stock of words that can be recognized instantly (Perfetti & Hogaboam, 1975; Perfetti & Roth, 1981; Samuels, 1979; Stanovich, 1980). In theory, if readers automatically recognize the words they encounter in print, their comprehension is enhanced. This is because readers are then able to concentrate solely on the ideas in the text, rather than on decoding.

The method of repeated reading is one technique that is highly recommended as an instructional procedure to enhance the reading fluency of unskilled readers (Allington, 1980, 1983; Anderson, 1981; Ashby-Davis, 1981; Aulls, 1977; Coots & Snow, 1981; Cunningham, 1979; B. Johnson, 1983; Kann, 1983; O'Shea & O'Shea, 1988; Samuels, 1988; Walker, 1983). In practising repeated reading, students read and reread short passages of about 100 words until pre-established criteria regarding rate and accuracy are reached. The reading and rereading of a number of passages over an extended period of time helps develop fluency. With increased fluency, comprehension is expected to improve.

The appeal of repeated reading lies in its simplicity and manageability. It is a very adaptable procedure because any type of material can be used for practice. Peers, volunteers or parents can monitor a child's reading performance. With the use of graphs to

record accuracy and speed, the procedure is self-motivating, encouraging students to improve on each successive performance.

Research, particularly research conducted over the long-term, has not always supported the assumption that reading comprehension performance improves with increased fluency. This study sought to determine whether or not repeated reading not only improves fluency but also enhances comprehension performance. Based on the assumption that reading in thought units should increase reading comprehension, the study also addressed the issue of whether or not repeated reading of text deliberately divided into segments corresponding to thought or pausal units was an even better technique for increasing reading fluency and enhancing comprehension than the repeated reading of naturally occurring text.

Orientation to the Problem

Theoretical Assumptions

The theoretical premise for repeated reading was espoused in 1908 when Huey (1908/1968) introduced the idea of automatization in the stages of reading skill development. Huey's premise was that in the initial stages of learning to read, close attention must be paid to unfamiliar words, but with repetition and the development of reading maturity, particular attention to individual words becomes unnecessary. LaBerge and Samuels (1974) suggested that in word recognition, accuracy is not enough because all of the reader's attention must be focused on the decoding task. Comprehension, as a result, suffers. With automaticity in word recognition, the reader can pay less attention to the surface features of the text, thus freeing up processing space for

the comprehension of ideas. Perfetti and Lesgold's (1979) bottleneck theory supports this notion. When processing space is required to unlock upcoming words, there is less capacity for comprehending and remembering ideas.

Schreiber (1980) proposed an alternate explanation to account for the effects of fluency on comprehension. He suggested that rereading the text permits readers to use phrasing and function words to enhance understanding. Thus all of these theorists agree that the goal of word recognition training is to free attentional capacity for greater comprehension.

Research

Early literature. Several effects of repeated reading are described in the literature. Gonzales and Elijah (1975) reported that rereading an IRI (Informal Reading Inventory) caused instructional word recognition levels to be reclassified as independent, and frustration levels to be reclassified as instructional. Samuels (1979) was the first to develop repeated reading as an instructional procedure, describing the actual format to be followed. He felt that with increased fluency, or "automaticity", comprehension would improve naturally. Neill (1980) followed Samuels' basic technique with appropriate modifications for his special education classroom. Moyer (1979) used a form of repeated reading with a single adult subject that she called Multiple Oral Rereading. Lopardo and Sadow (1982) described a successful version of repeated reading with college students in a corrective reading course that included silent reading and multiple choice comprehension questions. Generally, however, as in the case of

the studies by Neill and Moyer, only fluency, and not overall comprehension gains have been measured.

Repeated reading of word lists. Several studies involved the repeated reading of word lists. Students were trained by Fleisher, Jenkins, and Pany (1979) to read lists of words quickly. Decoding practice was found to increase subjects' decoding speed significantly but had no transfer effect as far as enhancing comprehension. In a similar study carried out independently, Spring, Blunder, and Gatheral (1981) found that training to automaticity on a set of words did not improve the comprehension of passages in which those same words were used. Dahl (1979) compared repeated reading of passages, cloze practice, and sight word drill, and found that repeated reading of whole text produced significant improvements in the speed of reading. Gains in reading comprehension were not as clear-cut, however. When Witte (1980) contrasted the repeated reading of textual material with word list practice, improvement was close to significant in both oral reading and comprehension scores for the whole text condition. In a second phase of the study, patterned practice (echoic reading) showed only a slight advantage over the rereading of word lists.

Considered as a whole, these studies suggest that for developing reading fluency, the repeated reading of whole text is superior to drill on isolated word lists. Nevertheless, comprehension has either not been measured or gains have been only tentative.

Use of audiotapes and computers. Audiotapes and computers have proved to be useful tools to enhance reading practice. Several studies have employed the tape recording of narrative selections. Chomsky's

(1978) students listened to and read along with commercial recordings of stories and received follow-up practice in the form of games, skill practice and writing. Carbo (1978) prepared her own tapes and, after a three-phase experiment, reported that the largest reading gains were seen in a structured format in which students listened to taped sections of basal or children's literature selections and read them to a tutor. These two investigators did not analyze student scores for significance or give details regarding comprehension improvement. Laffey, Kelly and Perry (1980) reported statistically significant comprehension gains, but lower vocabulary and accuracy gains after the implementation of a combined tape/repeated reading/comprehension activities program.

Simon, Hansen, Kelstein, and Porterfield (1976) found that taped echoic reading with segmented print (words divided into syllables) led to significant improvements in reading level and some improvement in comprehension. Martin and Meltzer (1976), when using a computer to coordinate taped sentences with segmented words on a TV screen, produced significant gains in fluency. Comprehension performance, however, was not measured. Carver and Hoffman (1981) programmed a computer to deliver repeated reading in a cloze passage format. They found that performance gains transferred to new material employing a similar task but not to reading in general.

Computers and tape recorders, particularly when used to model fluent reading, appear to add a new dimension to repeated reading practice. Difficulties associated with organizing the classroom and the monetary outlay involved suggest that repeated reading programs

that rely on technological devices may not be practical for the classroom teacher to implement.

Group instruction. The repeated reading procedure has been modified for group instruction, making it easier to apply in classroom settings. Lauritzen (1982) described how motivating materials could be used in an echo/choral reading format. Mathews and Seibert (1983) prepared a summer remedial program which included the echo/choral reading of weekly stories along with vocabulary and comprehension skill development activities. They reported comprehension and fluency gains but, like Lauritzen, included no documentation to support their results. Koskinen and Blum (1984) helped teachers organize small groups of below-average readers to work on the repeated reading of basal selections in pairs. When the results were compared with other study activities carried out with a partner, the repeated reading students had significantly higher oral reading fluency scores and made significantly fewer semantically inappropriate miscues, implying increased comprehension.

This literature suggests that the repeated reading technique may be adapted for use in regular classrooms. Careful documentation to support study findings has been lacking, nonetheless.

Segmenting text. The practice of rereading segmented text that has been divided into thought or pausal units has shown promise for enhancing comprehension. As a remedial technique in his university reading laboratory, Allington (1983) identified phrases in repeated reading material with a light slash. Weiss (1983) investigated two methods of segmenting text; a pausal phrase display where spacing

indicated the chunking of ideas or a syntactic phrase format in which noun and verb phrases were spaced separately. He found that presenting social studies information in segmented form produced significantly higher scores than presenting text in a standard prose format. O'Shea and Sindelar (1983) found that comprehension scores on cloze tests of both low and high performance readers were improved if the sentences were segmented. Slow but accurate readers were affected the most.

In an attempt to improve decoding speed, Fleisher et al. (1979) included phrase reading practice in the second phase of their word list study. Phrase training significantly affected cloze performance, but not comprehension measured by other means. In an unpublished pilot study, Carver (1985) compared traditional repeated reading with the rereading of text segmented into pausal units and with rereading the text followed by questioning. Although the results did not reach significance, repeated reading using segmented text led to the greatest improvement in both word recognition and comprehension performance.

Summary

The literature clearly points out that repeated reading is an effective method for improving reading fluency. Yet few of the studies demonstrated empirically that repeated reading practice leads to comprehension gains. It remains to be established that repeated reading is useful for enhancing not only reading fluency but also reading comprehension performance.

In a small number of the studies, investigators have either asked questions or required subjects to retell what they have read after repeated reading. This practice is based on the premise that students

would seem more likely to interact with the text if requested to tell back the story in their own words or to answer higher-level questions. Further research that includes this focus on comprehension is required.

Modeling, by listening to a teacher or an audiotape, was included in a number of the studies. However, modeling is not practical for the classroom because of lack of teacher time and equipment. Similarly, elaborate computerized programs are unnecessarily complicated and expensive in a school setting.

If teacher-modeling of fluent reading and the use of technology are not viable in classroom settings because of undue time demands and low budgets, dividing text into pausal units is an alternate approach that appears relatively easy to implement. Having students read segmented text to help them chunk ideas in meaningful multi-word units is worthy of further study to establish whether this practice leads to enhanced comprehension.

Repeated reading in the classroom setting has usually involved researchers coming into schools to administer treatment or whole group instruction. In terms of practical significance, it would be preferable for method and materials to be organized in such a way that a classroom teacher or volunteer could easily follow the correct procedure and students given stories at their instructional level adapted for repeated reading. Future research, therefore, needs to:

- 1) be managed by teachers themselves, not outsiders;
- 2) include comprehension as a dependent variable;
- 3) avoid modeling; and
- 4) determine if rereading segmented text is of greater value for enhancing fluency and comprehension than rereading only naturally-

occurring text. This study and the materials used therefore was prepared by the classroom teacher who conducted it.

Statement of the Problem

Based on a review of the literature, a key area for study was identified. As opposed to fluency training, further investigation is necessary to validate repeated reading as a long-term instructional technique for enhancing comprehension performance. A second issue is to discover whether repeated reading with text segmented into appropriate thought or pausal units is an even more effective approach for enhancing reading comprehension performance than the rereading of regularly formulated text.

Purpose

The purpose of this study was to examine the effects of repeated reading practice and the repeated reading of segmented text on the oral reading (word recognition and rate) and comprehension (uncued ideas recalled, uncued main ideas recalled, and cued recall scores) of at and below grade level second grade students.

Grade two students are ideal subjects because they are at the early stages of reading where the instructional focus is on learning to read as opposed to reading to learn. Performance was assessed through changes in instructional level, word recognition accuracy, rate of reading, and comprehension as measured by questions answered correctly and by the total number of ideas and the number of main ideas recalled in the oral retelling of reading passages at each students' instructional level. Since all students were rereading text at their individual instructional levels, and since scores of the posttest were

based on their individual posttest instructional levels, a composite index was also formulated to reflect individual gains from pretest to posttest on the various oral reading and reading comprehension factors that might be masked if differences in instructional levels were not considered. It was felt necessary to develop such an index because if only data at the students' instructional level, which falls within a narrow range (for example, the criterion for word recognition accuracy is 95-100% and for cued recall 70-100%) were considered, a subject who scored 70% in cued recall but who had improved one grade level would be overshadowed by another subject who scored 80% but stayed at the same level. Composite indices were calculated for word recognition accuracy, rate, total number of ideas, number of main ideas, and cued recall scores.

Statement of the Hypothesis

Given three groups of grade two students each composed of readers, at and below grade level, where one treatment group received repeated reading practice (RR), another received practice in the repeated reading of segmented text (RR-S), and the third acted as a control, the following hypotheses were generated:

First, regarding change in instructional level: There is no significant difference in the change of instructional level between the three groups (RR, RR-S, and control) as measured by the pre- and post-treatment administration of the Standard Reading Inventory (SRI) (McCracken, 1966).

Second, regarding oral reading: There is no significant difference in oral reading performance between the three groups (RR,

RR-S, and control) as measured by the oral reading component of the SRI at each student's post-treatment instructional level including:

- 1) word recognition accuracy
- 2) a composite index for word recognition accuracy
- 3) reading rate
- 4) a composite index for reading rate.

Third, regarding comprehension: There is no significant difference in the comprehension between the three groups (RR, RR-S, and control) as measured by the comprehension component of the SRI at each student's post-treatment instructional level including:

- 1) the total number of ideas in uncued recall (passage oral retellings)
- 2) a composite index for total number of ideas
- 3) the total number of main ideas in uncued recall (passage oral retellings)
- 4) a composite index for the number of main ideas
- 5) cued recall scores (responses to questions)
- 6) a composite index for cued recall.

Definition of Terms

Operational terms which have been used throughout this study have been defined as follows:

At grade level readers. For the purposes of this study, grade level readers are students in grade two, reading material in the grade two range as measured by the comprehension section of the Gates-MacGinitie Reading Test (1964).

Below grade level readers. For the purposes of this study below

grade level readers are those students reading below the grade two level as measured by their performance on the comprehension section of the Gates-MacGinitie comprehension subtest.

Instructional reading level. Instructional reading level indicates a level of material that is challenging but not frustrating for a student to read with support. The instructional reading level has been established by applying Betts' (1936) criteria of 95-99% word recognition accuracy in oral reading and a score of 70% or better in comprehension as evaluated by the Standard Reading Inventory.

Fluency. In this study the use of the word fluency applies to oral reading that is essentially free of hesitations and difficulty with word recognition. Fluent reading as used in this study does not imply reading with comprehension.

Word recognition accuracy. Word recognition accuracy refers to the percentage of words which are correctly pronounced in a printed passage.

Word recognition rate (automaticity). This term refers to the speed at which a person reads, and is expressed in words per minute. Rate is associated with fluency or word recognition automaticity, a state in which word recognition responses are immediate.

Uncued recall. Uncued recall is the process of bringing back from memory in an oral retelling that which has been read. As no question probes to prompt memory are used uncued recall, therefore, measures both comprehension and memory.

Cued recall. The term cued recall refers to the process of remembering or recalling what has been read as measured by

teacher/examiner questions.

Main ideas. In this study, main ideas are sentences or parts of sentences taken from the SRI which express the general or major understandings conveyed by each reading passage.

Composite index. This term refers to a figure which takes into account not only the various scores (word recognition accuracy, reading rate, etc.) at the instructional level on a posttest measure, but the change, positive or negative, in instructional level. It is determined by adding the performance score, as a percent, to the performance score times the gain in instructional level. In this study a composite index has been calculated for word recognition accuracy, rate, total number of ideas in uncued recall, number of main ideas in uncued recall, and cued recall score. Composite Index = performance + [performance x change in instructional level].

Segmented text. The text has been divided into thought or "pausal units" according to R.E. Johnson's (1970, p.13) criteria in which "the functions served by pausing might be to catch a breath, to give emphasis to the story, or to enhance meaning".

Word. A word is a unit of language, consisting of one or more spoken sounds having meaning. In this study when calculating one hundred words for the repeated reading passages, numbers or sounds counted as one word, for example, "1", "Hm-m", "br-r-r". One long word spread out or three individual words joined by hyphens counted as two words, for example "HelloooOOOOooo", "yes-yes-yes". A word with four parts joined with hyphens counted as three, for example, "cock-a-doodle-doo".

Scope of the Study

The purpose of this study was to examine the effects of repeated reading practice and the repeated reading of segmented text on second grade students' oral reading (word recognition and rate) and comprehension (uncued ideas recalled, uncued main ideas recalled, and cued recall). Subjects were 30 second grade students who were reading at or below grade level as determined by the comprehension section of the Gates-MacGinitie Reading Test. Students were randomly assigned (stratified by achievement level and sex according to Slavin's procedure, 1983) to a repeated reading group, a repeated reading plus segmented text group, or a control group which silently read the same material.

The treatment groups received individual practice of five readings every other day with a parent-volunteer. They were timed on 100-word passages at their reading level, as established by the SRI, which they reread until fluency (100 words per minute) was reached. At this point, the students recounted the story. Students in the control group read the same material individually and silently, but only once, and were asked about unknown words. For the segmented text treatment, the same passages were retyped with each sentence starting a new line and a three or four space interval left between pausal or thought units. (See Appendices A and B for specimen passages.) These students received the same individual practice as the repeated reading group. The study continued for 10 weeks after which an alternate form of the SRI was administered to evaluate post-treatment performance.

Organization of the Report

The main questions for study were whether or not repeated reading was sufficient to enhance comprehension performance and further, whether or not repeated reading with segmented text was an even better technique for enhancing reading comprehension.

Chapter 1 delineates the area of concern. The historical background and research involving repeated reading and the repeated reading of segmented text is reviewed in Chapter 2. The methodology and procedures of the study are reported in Chapter 3. Chapter 4 consists of an analysis of the data with appropriate tables. The final chapter contains a summary of the research, conclusions, implications for instruction, and recommendations for further research.

Chapter 2

REVIEW OF THE LITERATURE

This chapter examines the literature related to the study. The first section reviews the theoretical principles of automaticity on which repeated reading is based, while the second critically analyzes investigations involving the method of repeated reading in its many variations. The next portion considers research related to the use of segmented text as a modification of repeated reading. Finally the literature is summarized, providing a rationale for the study.

Theoretical Background

Huey (1908/1968) first introduced the idea of automatization in relation to reading. He noted that the early stages of reading are characterized by many word identification errors. At this level, a great deal of attention must be devoted to the surface features of the text in order to unlock new words successfully. He suggested that with repetition and more experience reading, competency is reached and the reader does not need to attend to the letter features of individual words. Since consciousness is less concerned with deciphering words, reading becomes automatic. The goal of practice in repeated reading is to reach this level of automaticity, in which word recognition responses are immediate.

LaBerge and Samuels (1974), like Huey, understood the combined importance of automaticity and attention. As theorists, they developed a partial model of reading as a "bottom-up" process, describing how visual information is processed sequentially through stages that involve the use of visual and then phonological, semantic and episodic

memory systems: visual memory having to do with the recognition of letters and their patterns, phonological memory with recoding the visual information into sound units, semantic memory with matching the text information with general knowledge and episodic memory with the recall of specific events. The model suggests that readers process text in this serial bottom-up fashion until meaning is obtained. It was further hypothesized that while attention activates these memory systems at any level, the human mind, being the limited capacity processor that it is, can focus on only one of these aspects at a time. Nevertheless, LaBerge and Samuels suggest that readers may process many pieces of information at once when direct attention to particular letter features and their sounds is not required.

When beginners are first learning to read, LaBerge and Samuels contend that attention must be directed to each word. They term this the accuracy stage. Such attention, however, is not necessary to the same extent at the automatic stage. But readers who must focus on extracting visual information from letters and words, translating the symbols into sounds, or matching new information with ideas they remember having learned previously, are at a disadvantage. According to LaBerge and Samuels, such readers are unable to reach the meaning or semantic stage because the need for detailed processing prevents them from integrating the ideas within the text with what they already know. In contrast, the fluent reader has practised these perceptual codes and has mastered each of the subskills to the automatic level. More processing space has been freed up for the comprehension of ideas because less attention to the surface features of the text is required.

To establish reading stages, LaBerge and Samuels recommend measuring reading rate.

Samuels (1977) later adjusted the model of automatic processing, adding further insight into what happens when fluent readers process text. He added feedback loops to indicate how the four major components (visual, phonological, semantic, and episodic memory) may interact and reinforce each other during reading. By providing for interaction between semantic and visual/phonological cueing systems, Samuels rejects the notion of serial stage, bottom-up processing.

In response to the question of how to incorporate the revised theory into pedagogical practice, Samuels perfected the technique of repeated reading. The focus in repeated reading is to measure speed as well as accuracy, and to facilitate the integration of reading subskills or memory systems through actual practice at reading whole text. Accordingly, the ultimate goal of repeated reading is to develop word recognition automaticity and free up processing space for comprehension.

Support for the efficacy of repeated reading also comes from Perfetti and Lesgold's (1979) bottleneck theory which suggests that the capacity for reading comprehension may be blocked if undue attention is required to decode words. Alternately, the working memory capacity can be used more effectively if the separate systems of the reading process are integrated and function automatically. These authors suggest working in three areas to decrease the working memory bottleneck, developing: long-term memory, speed and automaticity, and skill in reading thought units or in the chunking of information. Access to

long-term memory, for example, has the potential for building rapid word meaning knowledge, while speed and automation in regard to decoding lead to greater comprehension. Efficient reading strategies such as segmenting text into pausal units or employing organizing strategies to allow the chunking of ideas also has the potential for increasing reading comprehension.

Perfetti and Lesgold put forward two hypotheses to account for the link between decoding speed and reading achievement. In the by-product hypothesis, word meaning, not sound, is paramount. Reading behaviours that produce high comprehension scores lead to improved word recognition as a by-product, supporting a top-down influence on processing. In the bottleneck hypothesis, comprehension performance improves directly if training in word recognition is introduced. Since fast decoding is more automatic, the mind, which can only retain from four to seven items in working memory, has greater space for comprehension and avoids a bottleneck.

Schreiber (1980) proposed an alternate explanation to account for reading fluency and the success of repeated reading as an instructional technique. He criticized Samuels (1979) for his failure to explain exactly how reading moves from accuracy to automaticity. Schreiber contended that in listening, children depend heavily for understanding upon the prosodic features of speech made up of stress, duration and intonation. In written English, punctuation does not segment sentences into phrases in quite the same way. Schreiber suggested that the value of the repetition in repeated reading practice lies in permitting the reader to compensate for the absence of prosodic cues. In reading the

text over and over, the learner discovers appropriate syntactic phrasing and uses signals such as function words or inflectional endings to make sense of the text. This analysis focuses on the top down aspects of processing in reading—prosody and the use of syntactic cues to enhance meaning getting.

Summary.

There are several theoretical explanations as to why the method of repeated reading is a successful technique for improving speed, fluency, and comprehension. It may be that with practice, less attention is needed to identify individual words (Huey, 1908/1968). As a result, processing space is freed up for the comprehension of ideas (LaBerge & Samuels, 1974; Perfetti & Lesgold, 1979). Perhaps repetition allows the stress and intonation patterns (prosody) within the writing to be discovered, leading to increased comprehension (Schreiber, 1980). All theorists would agree, however, that the aim of such word recognition training exercises as repeated reading is to free attentional capacity for increased comprehension.

Repeated Reading

Early Literature

One of the first repeated reading studies dealt with the effect of rereading upon reading performance. Gonzales and Elijah (1975) looked at how repeated oral reading of an IRI (Informal Reading Inventory) at the instructional and frustration levels would affect the number of errors and the assignment of reading levels. The target group was 26 grade 3 students reading between levels 2.75 and 4.25. The selection of subjects was controlled first through teacher judgment regarding

student reading achievement levels and then through the administration of the McCracken (1966) Standard Reading Inventory (SRI). Students were given oral passages of at least 175 words at their instructional and frustration levels to read and reread. Substitution errors were categorized and statistical differences between word recognition scores on the first and second reading calculated.

Results indicated that the number of student errors changed but the patterns of their miscues stayed the same. At the instructional level, structural analysis and refusal errors showed a significant reduction with rereading. At the frustration level, visual perception, visual-auditory, and structural analysis miscues also showed significant reductions. Factors which remained constant were the number of word omissions, repetitions, and self-corrections. Improved scores after rereading caused initially-assigned instructional levels to be reclassified as independent and frustration levels as instructional. Gains with rereading ranged from 93.5% to 94.7% for word recognition at the instruction level and from 88.89% to 92.4% at the frustration level, indicating an impact on word recognition when passage rereading was permitted.

Overall, this study was easy to understand. The problem was clearly defined and followed through to logical conclusions. A system for controlling inter-rater scoring errors and scoring differences made by the same observer across passages was not specified, nor was the source of the reading passages, which were not, as the title suggests, IRI selections. The authors appear to have disregarded SRI guidelines where the criteria for independent word recognition is 99-100%,

instructional word recognition is 95-98%, questionable instructional is 91-94%, and frustration is 90% and below. SRI criteria would have classified the changes from low instructional to instructional and from frustration to low instructional; thus, the claims made by Gonzales and Elijah seem exaggerated. One rereading was not sufficient to change the pattern of reading miscues. As well, since comprehension was not a consideration, this study cannot answer the question: Does repeated reading lead to comprehension gains?

The person responsible for developing the method of repeated reading was S. Jay Samuels (1979). Based on an earlier study, he describes the actual technique and its use as a supplement for building fluency both with normal children and those with special learning problems. In repeated reading practice, children select an easy story of interest to them and then read a short section (50-100 words). Speed of reading and the number of word recognition errors are recorded on a graph. After practice time, the procedure is repeated until the criterion rate of 85 words per minute (wpm) is reached. The next section is then read. It has been found that as speed increases, word recognition errors decrease. Also, the initial speed with which each new section is read is faster and the number of rereadings necessary to reach the criterion rate decreases. These phenomena indicate that the effects of training are transferring across passages. Speed is emphasized over accuracy during instruction to avoid developing anxiety regarding mistakes. Overemphasizing accuracy may result in slowing reading rate.

The purpose of the task is explained beforehand by building an analogy to athletes or musicians who build proficiency through practice. Students become excited by their progress and the compilation of the graph is also motivating. Thus boredom does not become a problem.

Samuels hypothesizes that comprehension improves because less attention is required for decoding, leaving more processing space available for understanding. As a check, the instructor can ask a different comprehension question with each rereading. Since the method is easy, other students, teacher aides, or parents, as well as the teacher, can time, score, and assist with student practice. Repeated reading is linked with the theory of automaticity in which word recognition goes through three stages—non-accurate, accurate but not automatic, and finally automatic. The best indicator of automaticity, according to Samuels, is reading rate.

Samuels has presented a simple, concise way of improving fluency for unskilled readers. The steps involved in the procedure can be easily duplicated. Almost anyone available can act as a tutor. It appears that repeated reading can help all readers—the mentally handicapped, adults, and remedial readers at all age levels. The question is: Are there some readers for whom this procedure will not work equally well? Calculating words per minute can be time consuming for teachers unless a fool-proof formula is included or an alternate version for scoring speed is implemented. Samuels' criterion speed is 85 wpm but McCracken (1966) suggested minimum rates ranging from 70 wpm (grade 2) to 130 (grade 6) as being appropriate. Perhaps the reading

rate should be changed or graduated. This method is based in theory, but as Schreiber (1980) has indicated, the reading improvement that takes place may be attributed to practice in the use of proper intonation and phrasing patterns rather than to practice alone.

Neill (1980) employed repeated reading in order to enhance reading interest, rate and comprehension for learning disabled and behaviourally disordered students at the junior high school level. Neill followed Samuels' basic format but, with help students set their own goals in terms of reading rate. Passages of 100 to 200 words were taken from a basal reader and speed was recorded as time in seconds rather than words per minute. Students called this method a "sped game" (special education) and 12 of the 16 students asked to participate in the program again.

Neill has no statistics, only observations, to back up claims of reading comprehension gains and changes in attitude. He mentions that one student's time improved from 175 to 25 seconds for x number of words but that the student read and reread the same passage 34 times. Scoring time in seconds, rather than wpm, is a helpful alteration to avoid calculation errors, but it is difficult to compare the reading rate from one selection to the next if passage length is different. No reason was given for having a student continue to read one particular selection over so many times, rather than beginning another selection at the same level. When students choose their own goals, motivation to reach them is likely to be high, but perhaps a set standard, such as Samuels' 85 wpm, would give more consistent progress information to the teacher.

Moyer (1979) described a case study carried out before Samuels popularized repeated reading. The subject was a 30-year old male, suffering from alexia, a cerebral disorder characterized by the inability to understand written speech. The student worked independently in a grade 2 textbook and then was tutored by graduate student instructors for two terms using the Fernald technique (VAKT), sight word flash cards, and the Controlled Reader. Following this, Multiple Oral Rereading (MOR) was introduced. Instruction consisted of 12 weekly sessions, each 90 minutes long. When tested initially the subject's reading rate was 48 wpm (Gray Oral Reading Test), evidence of slow word-by-word reading. MOR passages of 600 words at the grade 5-6 level were taken from a children's encyclopaedia. A passage was read and timed weekly then practised daily for 30 minutes at home. It was reread at the next session and performance was graphed before a new passage was assigned. Speed was charted as syllables per minute (spm) rather than wpm to take the difficulty of material into account. At the conclusion of treatment, reading rate for this handicapped learner had increased from 66 spm to 94 spm, a 42% improvement. Reading speed, as measured by the Gray Oral Reading paragraphs, increased 50%, from 76 spm to 114 spm. Comprehension was not scored as it was not a direct instructional goal. Moyer attributed her subject's improvement to automaticity and the repetition of language units larger than a sentence.

It is interesting to note how MOR, a version of repeated reading, was developed independently of Samuels. Both authors used materials at the independent-instructional level, measured speed, and subjects

reread the same text until fluency was achieved. There are, however, weaknesses in the Moyer study. What the patient and tutor did for 90 minutes is not explained—two readings of 600 word passages would take less than half that time. It seems that repeated reading for practice was only a small part of the remedial program. No criterion speed was given as a goal, nor was it clear whether the subject timed himself at home. In support of her work, Moyer did, however, explain the theoretical background of her study succinctly.

Moyer later (1982) summarized her procedures and reviewed the descriptive and empirical evidence regarding repeated reading. She explained the two components of fluency—accuracy and speed—and the performance differences between good and poor readers. Three types of reading models were noted—bottom-up, top-down, and a parallel interactive model, the value of repetition being linked to each of these processing modes. She concluded that repeated reading allows for practice in integrating all levels of written language structure.

Lopardo and Sadow (1982) tested the effectiveness of repeated reading with college students in a corrective reading course. Realizing that procedures were unavailable for use with older students, they developed their own. They used a series of published material at grade levels 6 to 13 with 50–400 word passages and 10 multiple-choice comprehension questions at each level. Students were assigned to a level on the basis of scores on the word recognition subtest of the Wide Range Achievement Test (WRAT). The criteria decided upon were: silent reading speed—200 wpm; oral reading speed—100 wpm; word recognition accuracy—95%; and comprehension—60%. The silent reading

aspect was added because of the need for silent reading in post-secondary schooling. After being placed at a level, students read the first passage aloud and were scored for speed, accuracy and comprehension. If they reached the criterion rates, they then went on to the next story at the same level, but read it silently. If students failed to achieve the criteria, they had help with word recognition, practised at least twice, then reread the passage orally. This was repeated until speed and accuracy standards were met. At that time comprehension was tested. If the 60% level was not achieved after three tries, the teacher provided direct instruction to help the student understand the passage. Procedures for silent reading were identical, except for the omission of the word recognition score.

The Lopardo and Sadow article details an approach to repeated reading for improving the comprehension and decoding skills of college students that would also be applicable at the secondary level. Although called a study, it is actually a description of the method used. As there may be a need for remediation of both word recognition and comprehension at the young adult level, Lopardo and Sadow must be commended both for their adaptation of the method and selection of criteria. However, because the WRAT word recognition subtest only assesses decoding words in isolation, it was inappropriate to use as a reading level placement test. Posing multiple-choice questions is also a limited way of testing comprehension. In addition, there was a paucity of oral reading practice. At each level, one passage only was read aloud and scored, while the remaining 49 passages were read silently. Closer monitoring of decoding skills was in order. Neither

testing of overall comprehension gains was carried out nor the theoretical background explained.

Summary. The early repeated reading literature can be seen to support the use of the practice as a remedial technique. However, with the exception of Gonzales and Elijah (1975), none of the report writers (Lopardo & Sadow, 1982; Moyer, 1979, 1982; Neill, 1980; Samuels, 1979) included an empirical study and not one documented the effect of repeated reading on comprehension.

Repeated Reading of Word Lists

In contrast to the foregoing, several researchers have explored the effect on comprehension of the repeated practice of words in isolation. Fleisher, Jenkins, and Pany (1979) made links to the bottleneck theory (Perfetti & Lesgold, 1979). They hypothesized that comprehension would benefit directly from decoding training on word lists. Twelve good readers and 20 poor readers at the grade 4 and 5 levels were identified by means of teacher judgment and scores on the Metropolitan Achievement test (above the 60th percentile and below the 40th percentile, respectively). The poor readers were trained individually on words taken from one of two short passages until the criterion rate of 90 wpm was reached. At this point, subjects read the passage and performance was measured according to rate, accuracy, responses to 12 comprehension questions, and a cloze passage. The same students acted as their own control by reading the second passage without prior word recognition training. The general conclusion was that for poor readers, word recognition training improved context reading but not general comprehension.

A second experiment replicated the first but also attempted to overcome some of the initial limitations. Thirty-three poor readers were trained until they reached the same speed levels as eleven good readers. Half of the poor reader group received practice reading word lists while the other half practised reading phrases. Readers were not overtly timed in order to avoid an overemphasis on speed rather than comprehension. Uncued recall was added to measure comprehension. The effects of decoding training, whether through single words or through phrases, failed to enhance either comprehension or decoding speed when words were presented later in context. Phrase training did significantly affect cloze performance, but not performance on the remaining comprehension measures.

Fleisher, Jenkins, and Pany acknowledged that short-term isolated word practice may have been an inadequate strategy for producing automaticity. They pointed to repeated reading in context as having value because information is chunked. During the study, the investigators were careful to control for vocabulary knowledge by testing a group with similar characteristics. There likely were other factors (e.g., intelligence and motivation) that should have been taken into consideration. According to Schreiber (1980), phrase training should have had a greater effect. Comparing phrase training with the repeated reading of whole text would have strengthened the design of the study.

Spring, Blunden, and Gatheral (1981) conducted a word list training study that was similar to, but independent of, Fleisher, Jenkins, and Pany. Cloze was also used to measure comprehension

performance. Again the investigators were searching for evidence that word recognition and comprehension are causally related. They hypothesized that training in automaticity would facilitate comprehension and lend support to the LaBerge-Samuels reading model.

After being tested for baseline reading levels, 48 grade 3 children at grade level were randomly assigned either to a control or an experimental group. The experimental group received automaticity training on words taken from one of two Macmillan-R basal reader passages. Cloze scoring involved both strict and lenient criteria (exact word replacement or synonym scoring). When the comprehension scores were evaluated using the baseline scores as covariates, it was noted that children who made more baseline word recognition errors scored lower in comprehension. There was no support, however, for the hypothesis that automaticity is related to comprehension.

Spring, Blunden, and Gatheral have given a clear, concise description of their study and appear to have followed proper design and administrative procedures. However, cloze is not the best measure for assessing comprehension, particularly when it is the only one. Also, no explanation was given for how the students were trained to automaticity on the word lists. The authors did compare their results with those obtained by Fleisher, Jenkins, and Pany (1979) and proposed possible reasons for failure. Perhaps more extensive training over several sessions was needed to achieve automaticity, or the link between word recognition and comprehension is phonetic processing and it is that skill that must be made automatic.

Dahl (1979) took isolated word recognition training one step further and compared it to repeated reading and hypothesis/test (cloze) practice. The subjects, 32 poor readers in grade 2, were randomly assigned to one of three training groups (drill in word recognition, hypothesis test or cloze, and repeated reading), receiving training or no training in all of the three areas. In the isolated word recognition condition, students received drill on 800 sight words flashed from a slide projector using a timer. In the hypothesis/test condition, readers formed a hypothesis which was or was not confirmed by the syntactic or semantic cues in the text. This procedure closely resembled cloze training. The third condition was repeated reading. The criterion rate was 100 wpm and the level of materials began at grade 3 and ranged to grade 13 by the end of the 8-month training period. Students received 20 minutes of daily training for each experimental factor.

Dahl employed 12 dependent variables to test her hypotheses. When the statistics were analyzed, hypothesis/test was found to have the greatest amount of significance on 8 of the 12 variables. Repeated reading was next with significance on 6 of the 12. Subjects who received both repeated reading and hypothesis/test training demonstrated only two significant factors (cloze and timed reading of passages). The timed repeated reading procedure was interpreted as being superior in terms of fostering comprehension, however. Isolated word recognition training did not appear to be useful.

This study was well designed and well documented. The procedures were based solidly in theory, training continued over the course of the

total school year (more than an ample length of time) and passage length which was exactly 100 words, eliminated calculation errors. However, there were some questionable aspects. Dahl intended to look at intermediate, not beginning reading skills, but students in grade 2 are just starting to develop reading ability, particularly the less able readers. It was puzzling that grade 3 material was used; the grade 1 level would seem to be more appropriate. Students were chosen randomly for treatment groups but there were only four students in each group. Hypothesis/test was said to be a strategy that fluent readers used but Stanovich (1980) contends that context-free word recognition, making efficient use of the sound symbol correspondence in words, is more efficient than depending upon context alone.

Witte (1980), unaware of Dahl's research in this field, noted that there were no studies directly comparing repeated reading with decoding word lists rapidly. The first part of her informal study dealt with this question and with the dilemma of what to do with students beyond the primary level who possess weak decoding skills but some comprehension abilities. One grade 4 student and three grade 5 students, fitting the above description based on scores on the Macmillan-R placement test, practised all the words taken from a Macmillan basal passage to automaticity. They then read the passage aloud and wrote answers to nine comprehension questions. The second task was to read another portion of a selection from the grade 3 Macmillan-R text that was approximately 125 words long twice (repeated reading) and again answer questions. Oral reading and comprehension scores from both tasks were compared, questions being taken from the

Macmillan series teacher's manual (4 inferential and 5 factual). Students worked individually, two with word lists and two with repeated reading, and then the tasks were reversed. Oral reading and comprehension scores were found to be higher with practice in the repeated reading of whole text. The statistical scores when analyzed were close to significance. The students seemed to be using prosodic cues with the second reading.

A second part of the Witte (1980) study examined the effects of modeling correct intonation patterns on the oral reading and comprehension performance of the same four students. Using identical methods and materials, the effects of independent repeated reading practice were compared to the effects of patterned practice, in which the children listened to the passage being read as they followed along, read it aloud once, and took the comprehension test. Performance was tabulated as before. Students scored slightly better in comprehension and made fewer errors with patterned practice but this difference was not significant. Witte felt that these studies demonstrated that repeated reading was a useful remedial technique and that prosodic cues do have an influence on oral reading.

In her experiments comparing repeated reading and word list training, Witte took a different approach than Dahl and used fewer subjects. She controlled for bias by having the two techniques alternate and avoided inter-rater differences in assigning levels by following the guidelines established in the Silvaroli Classroom Reading Inventory. This was the first study to compare word list drill with repeated reading and then repeated reading with echo reading (patterned

practice). Significance was not reached in the second experiment but might have been if larger amounts of repeated reading and patterned practice had been given. Oral reading and comprehension gains were scored directly from the reading passage. Pretests, posttests, and perhaps a delayed posttest would have documented absolute gains. Using a test not tied to the basal reader series would have been preferable.

Summary. Independently, Fleisher, Jenkins, and Pany (1979) and Spring, Blunden, and Gatheral (1981) followed the theoretical precepts of both the bottleneck hypothesis (Perfetti, 1977; Perfetti & Lesgold, 1979) and automaticity theory (LaBerge & Samuels, 1974). These two studies examined the effects of isolated word training on reading performance. Neither study succeeded in terms of enhancing comprehension.

Dahl (1979) and Witte (1980), in comparing repeated reading with isolated word training, achieved partial success; Dahl reported significance on one of the four comprehension measures (regular cloze test) and Witte indicated that scores were close to significant. Witte felt that training on individual words did not improve comprehension because it was removed from the context of meaningful sentences and their inherent prosody. Dahl suggested that the repeated reading of paragraphed selections was of greater value than reading isolated words that were flashed because students could integrate word recognition subskills and understand the relationships among words in a holistic manner. What is suggested from the findings of these studies is that further research should: 1) include more than one measure of comprehension; 2) have students read connected text rather than

practise on isolated word lists; 3) include some kind of modeling or patterned practice; 4) conduct the repeated reading over longer terms; and 5) keep the passage lengths standard to help control scoring errors.

Use of Audiotapes and Computers

Specialized equipment has been used to augment the repeated reading process and provide the modeling of fluent reading. Chomsky (1978) developed a repeated listening and reading technique for five grade 3 emergent readers using stories recorded on tape. These children had previously received phonics training and remedial teaching but could decode only at a very slow pace. Chomsky hypothesized that learners had to participate actively in the reading process to achieve gains. Students in her study followed a three-step procedure. They listened to a tape recording of an individually chosen story book daily and then relistened to one section. They set their own pace until a combination of memorization and reading was achieved. The second step was follow-up language games and phonetic analysis exercises based on the words in the selection that they had read. Activities included flash card drill, locating words in whole text, and using letter blocks. The third factor was the independent writing of stories and compositions. Students' oral reading was monitored twice weekly and follow-up activities developed. Progress at first was slow but then picked up. Increasingly, later books took less time to finish. Skills learned appeared to transfer to new material, both at school and at home, and the children's reading and writing performance showed a close connection. At the end of four months, all students demonstrated gains

in reading ability (as measured by group and individual tests), as well as shifts in attitude. Chomsky attributed the success of the procedure to the fact that in following this technique children could not fail. Thus their confidence and self-esteem were enhanced.

Chomsky has demonstrated a very positive method for developing fluency that combines Samuels' practice toward automaticity with Schreiber's modeling of prosodic cues. She did not explain why she conducted her study in that particular school and in what capacity. No criteria were given for deciding when reading was sufficiently fluent. Although she included the results of pre- and posttests, in some cases these figures showed very little gain, particularly in the delayed posttest. Nevertheless Chomsky's technique has merit and is practical for instructional application in classrooms.

Carbo (1978) also used repetition on a regular basis when she developed "talking books" for students with severe learning handicaps, particularly students with memory and auditory perception difficulties. Unlike Chomsky, Carbo did not use commercial recordings, but prepared her own tapes with three recording techniques: cueing the listener to the page, phrase reading, and tactile reinforcement (following with the finger). Over a 3-year period she tutored 8 students using three different approaches. For the first, she recorded 30 paperback books at grade levels 2 to 5. In an unstructured format students listened to a tape of their own choosing and followed along in a book, after which they would discuss the story and perhaps read it aloud. After 3 months, the average reading gain on test scores was three months.

In the second phase of the study, materials were altered. Primary

children received basal readers and intermediate children chose their own books. Parts of each story were recorded each day with the rate, phrase length, and passage length being established dependent on the difficulty of the book. After listening to the tape three or four times, the student then read the selection back to the tutor. For the 3 month period, the average reading gain was eight months.

Phase three, programmed tape-recorded books, involved a combination of the first two procedures. One hundred high interest books were sequenced in order of difficulty and then recorded in short segments. Supplementary practice materials—cards, exercises and games—accompanied each story. Because all of the materials were prepared ahead of time, rather than on a daily basis, and volunteers were available, more students could participate. After 3 months of training, the average student gain was 6 months.

Carbo explained the theoretical rationale for her method as helping students to integrate rate, rhythm, and natural flow of language (like Schreiber) without the interference of a decoding bottleneck (as seen by Perfetti). She, herself, did not relate this interpretation to that of any theorists. She reported that students improved in comprehension, word recognition, and vocabulary, but, in her article, mentioned only overall gains, giving no information regarding her testing procedures or specific test results. She referred to eight students, but it was unclear whether the same students were followed throughout or if the three techniques were tried in one year or one per year. The students appeared to proceed with new material every day, without repeating a page or reviewing the entire

book. No criteria were given for speed or accuracy. One advantage of Carbo's procedure is that it can be used both by the classroom teacher and by specialists, but the expense of tapes and tape recorders and providing access for groups of students could be problematic. The second procedure, individualized taping of stories, led to the highest gains and, while time-consuming, appears to have the greatest value, although Carbo lauds version three, which included books and permanent audiotape material sequenced by level of difficulty, for its efficiency.

Laffey, Kelly and Perry (1980) studied the effects of taped literature using less competent students at the intermediate level as subjects. These investigators hypothesized that there would be no significant differences between experimental and control groups in terms of performance on vocabulary, comprehension and accuracy measures. Two groups of 10 grade 5 and 6 students were matched on the basis of reading scores on the California Achievement Test, then were given the alternate forms of the vocabulary and comprehension portions of the Gilmore Oral Reading Test as pre- and posttests. All were in a special reading program and read approximately two years below grade level. The experimental group read and listened to tapes of interesting and appropriate stories recorded by an unfamiliar voice, beginning at their independent level and ranging across grade levels 2 to 5. For 13 weeks subjects participated for 15 minutes a day, listening to tapes two or three times and then reading along orally until fluent. As a follow-up, students had a choice of reading to the teacher, the experimental group, their classroom, or another classroom.

Comprehension activities included discussions, questions, sequencing and writing.

The findings of the Laffey, Kelly, and Perry study were that comprehension scores were statistically significant for the experimental group. Vocabulary and accuracy scores, though not statistically different as a result of training, were considered educationally significant because of more positive attitudes toward reading, as noted in anecdotal records. The authors warned that other variables could have affected the results: teacher enthusiasm, the comprehension activities, or the motivation provided through the use of tape recorders. The investigators concluded that repeated reading while listening provides practice which leads to automaticity and is beneficial because frustration caused by lack of success is avoided.

This study gave more empirical data than the previous two and developed reading with tapes to a finer degree. It warned of possible limitations and tied the instructional technique to previous research and the theory of automaticity. Despite this, there remain a number of unanswered questions. The introduction tells of the difficulty culturally different students have in learning to read but the study did not appear to deal with this type of student. Details regarding the materials and actual procedures used are sketchy. Did the control group receive any instruction? No significant gains were noted in word recognition or vocabulary yet repeated reading with tapes was recommended. Attitude improvement was measured according to whether or not students chose to read in their spare time. Documentation, such as that provided through the administration of the Estes Attitude Scale

(Estes, 1971), for example, would have strengthened this supposition.

Two other studies combined taped echoic reading with print segmented into syllables. Simon, Hansen, Kelstein and Porterfield (1976) attribute the difficulty high school students have deriving meaning from text as being due to many factors: increasing numbers of multisyllabic words, word-by-word reading, disregard of prosodic signals, de-emphasis on oral reading past the primary grades, and behaviour and attitude problems. They hypothesized that the taped echoic response method (TERM), in which fluent reading is modeled on a cassette tape, in conjunction with segmented print (SP) where words are divided into syllables, would improve oral reading and would have a positive effect upon comprehension. Sixty-six grade 10 students from an inner city area, reading four or more years below grade level according to pretest results, were randomly assigned to three groups in a diagnostic-prescriptive remedial reading program: TERM-SP, TERM-NSP (non-segmented print), and control. Materials used had readability levels ranging through grades 6-8 and were selected by a committee of pupils. TERM-SP selections were typed in segments with one space between segments joined with an arc, (for example, be[^]cause), and two spaces between words. Selections were recorded on cassette tapes at a rate of approximately 125 wpm.

The two experimental groups listened to the tapes and recorded their own oral reading with the opportunity for re-recording. The control group followed a diagnostic-prescriptive remedial reading program. After 60-40 minute periods of treatment over a period of 12 weeks, a posttest using the Gilmore Oral Reading test indicated that

fluency in the TERM-SP group was significantly greater than that of the control. Some gains in comprehension, as measured by the Metropolitan Achievement Test, were noted for TERM-SP, but these were not significant. The authors recommended the use of TERM-SP because of its multi-sensory, whole language approach and the opportunity it provided for non-threatening learning.

Although this was only a pilot study, information was presented in a clear, concise manner. Proper research procedure and format were followed. Checks were made on scoring accuracy and potentially disruptive factors were controlled. The student selection committee was an unusual and appropriate addition to use in choosing passages. However, no criteria were set for what constituted fluent reading and pupil performance did not appear to be monitored. The control group was not pure, that is, without any form of treatment except regular classroom teaching. The Hawthorne effect associated with the use of cassette recorders was addressed but not accounted for. It would have been helpful to the experiment if a treatment group had listened to curriculum literature on the machines. Further, having individual words segmented into syllables rather than sentences segmented into phrases seems counter to whole language philosophy.

Martin and Meltzer (1976) also explored the link between printed symbols and the rhythm of a spoken sentence by using segmented text, but they added a TV monitor. Twenty-four children from grades 1, 2, and 3, who were attending summer remedial class, participated. Twenty short sentences, taken from a reading series workbook, were marked for rhythm and recorded at a metronome speed of 75 beats per minute. A

computer synchronized each syllable shown on the screen with that heard on the tape until the entire sentence was visible. The control version had the full sentence appear on the screen instantly. Pre- and posttest materials consisted of four short sentences, two long sentences, and one paragraph. Three 10 minute training sessions took place during a two week period. On day one, each student read the test material onto a tape and then was exposed first to a visual, secondly to a visual-plus-auditory, and thirdly to a visual version of the sentence which the student was asked to read. The text comprised about five sentences in all. On day two, about 12 more sentences were practised following the same procedure. On day three, the child reread the complete text. Six judges listened to random sets of pre- and posttest pairs of sentences or paragraphs and chose which of the two was the more fluent, giving it a confidence rating. The rhythmic group had 75 posttest readings that all six judges deemed more fluent, while the control group had 67. A comparison of the two groups using a rating score showed a reliable difference. The results were interpreted as showing greater fluency gains after exposure to "visual rhythms" than static sentences. The authors gave suggestions for further research and touted this method as being useful for teaching the deaf. Comprehension was not measured.

Methodology in this study was creative but too complicated and expensive for either easy replication or use as a remedial technique in classrooms. Programming the materials would be difficult technically and the fluency judgments too fussy. Programming consisted of 30 minutes total time per student and a mere 20 sentences. Oral reading

fluency was the only goal, not comprehension. Following a finger during echo reading may be as effective and certainly simpler than the "visual rhythms" approach.

Carver and Hoffman (1981) explored three problems in their study: 1) was research with repeated reading replicable, using a computer-controlled feedback system; 2) could gains in performance be transferred to new practice material; 3) would practice for an extended period improve general reading ability. After a preliminary study, they chose six grade 9 students who were reading at a grade 4, 5, or 6 level. Two-hour training sessions took place three days a week for which the students were paid \$2.50 an hour. Two sets of 80 passages, 10 each from grade levels 2-9, were randomly chosen from a larger collection. Training took place on a PLATO IV computer using a program that encompassed the basic features of repeated reading but with the emphasis on accuracy, rather than speed. The program was actually a "maze" form of cloze with two choices given for the selection of every fifth word. The computer gave immediate feedback on the number of words correct, time, and reading efficiency, a score from a formula which combines the accuracy, rate, and grade level of the passage. Students read a passage until all 20 cloze questions were correct and took two speed tests before going on to new passages. Reading gains were measured by the Gates-MacGinitie Reading Test (G-M) and the National Reading Standard (NRS) in a pre-, post-, and delayed posttest design. The delayed posttest was given only to the first experimental group, not the six students who participated in a replication of the study during the second term.

Results indicated that performance gains transferred to new material given a similar task but not to reading in general. Reading efficiency scores from the cloze task improved an average of 16% and NRS levels gained 3.5 grade equivalents. That test is a version of the cloze study skill, however. The G-M which measures general gains indicated little change except on the comprehension subtest. Carver and Hoffman hypothesized that perhaps repeated reading was more effective when students were at the "beginning phase" of reading (about the grade 4-5 level) when their listening comprehension was higher than their decoding ability (Witte, 1980, would agree) and ineffective at the "advanced phase" (grade 5 level and up) where gains are the result of acquired knowledge, not simply skill practice.

This study, in combining repeated reading with computers, has brought repeated reading into the technological age. But the maze or cloze method, chosen because of inherent computer limitations, is similar to Dahl's hypothesis/test technique (1979) and thus the study only partially examined repeated reading. Not enough information was given about the accuracy of the formula used to calculate the reading efficiency scores. A thorough statistical analysis was not conducted on the scores; means only were given. The computer and its hardware is very expensive and this program is unavailable for regular classroom use. Only one student could practice at a time and pupils might not be willing to train for 2-hour periods. Money, which was used as an incentive for participating in the study, would not likely be available in the regular school budget. Following Samuels' methodology of repeated reading is easier, cheaper, and less time-consuming. The

student, moreover, has more autonomy in choosing material. Carver and Hoffman's procedures, while ingenious, do not appear to be relevant for use in the classroom.

Summary. These six studies (Chomsky, 1978; Carbo, 1978; Laffey et al., 1980; Simon et al., 1976; Martin & Meltzer, 1976; Carver & Hoffman, 1981) used mechanical devices—tape recorders, computers, or a combination of both—to augment the method of repeated reading. These machines are motivating for most students and are an excellent source for modeling fluent reading in the classroom. There are serious drawbacks in using technological innovations, however. Commercial tape recordings can be costly to purchase, while teacher-made tapes require a great deal of time to produce. Usually only one tape recorder or computer is available per classroom. Computer programs suitable for repeated reading are expensive and difficult to obtain. Synchronized auditory-visual versions, such as "visual rhythms" (Martin & Meltzer, 1976), are as yet unavailable. Furthermore, only Laffey et al. (1980) found statistically significant comprehension gains using one of these machines.

Group Instruction

Lauritzen (1982) saw the value of repeated reading but felt it had limited use in the classroom because of the demand on the teacher's time and the difficulty of using it with a group. She modified the method for the classroom by having motivation derive from the materials rather than the speed and accuracy graphs used in conventional repeated reading programs. Accordingly the poetry, songs, or folk tales chosen as material had either a strong sense of rhyme, rhythm, and sequence,

or a rich repetitive pattern. When the material was presented, the teacher read while the children followed. Next the children echoed back either a phrase, line, sentence or paragraph that was modeled by the teacher, depending on the format. Thirdly, the teacher and students read in unison. There were several options at this point. Students practised reading the selections either individually, in pairs, or in small groups. Follow-up included having the teacher make a tape for individualized practice or students electing to read to an audience, for example, parents or students in another classroom. Additional practice was provided through games or other reinforcement activities such as sequencing sentence strips or categorizing word cards. In this article, Lauritzen described a group of grade 2 students at the primer level working 15 minutes daily over a two-week period to master a poem.

Lauritzen has pointed out some of the limitations associated with repeated reading and has altered the technique to apply to a group. The procedure is simple to conduct and of interest to most children. It would fit easily into a classroom program in the primary grades and could be modified for use with intermediate grade students. With older children and adults the regular repeated reading method would likely be more appropriate. Lauritzen included no documentation regarding reading comprehension gains to support the efficacy of her procedure. The emphasis seemed to be on fluency and automaticity.

In another group-modified repeated reading procedure, Mathews and Seibert (1983) describe the students in their first grade summer remedial program as intelligent but as exhibiting self-defeating

behaviours. Their program, PALS (Providing Assisted Learning Strategies) involved a structured group reading situation that focused upon task. A weekly story of about 50 words was used to develop three areas of reading: fluency, vocabulary, and comprehension. The first section contained steps similar to those employed by Lauritzen. A new story, written on a chart, was introduced every Monday. The teacher modeled fluent reading of the passage and students echoed back. Choral reading gradually replaced echo reading. Time for individual practice was allowed. Children conferenced with and read to the teacher, being encouraged to improve their reading rate through timed readings. Students were subsequently drilled on words from the stories they read. This was followed by read-along activities with different materials. Vocabulary development took the form of a structured, five day cycle drill on 10 words taken from the story. Similarly, four comprehension skills (sequencing, main idea, inference and prediction) were applied to the story and then to other material on a cyclical basis. Daily story time was also included. At the end of six weeks, Mathews and Seibert reported increases in sight word vocabulary and greater reading fluency and comprehension.

This is a very impressive, well organized reading program that makes good use of structure, repetition, all phases of language arts, and recent research and literature. Unfortunately, not being a study, it leaves out important information, such as how many students participated and how long the school day was. A greater loss is the lack of pre- and post test measures which could have documented gains made in the three areas, particularly comprehension. Support for

Samuels' theory of automaticity is therefore lacking. Nevertheless, the ideas given in this program suggest ways that the repeated reading procedure may be adapted for classroom and resource teacher use alike.

Koskinen and Blum (1984) investigated the effectiveness of repeated reading as a strategy in a regular classroom. After pretesting through the use of the Diagnostic Reading Scales (DRS), six teachers and their 32 below average third grade readers were randomly assigned to one of two treatment conditions. The repeated reading training group received three practice sessions on how to select short passages from their basal readers, work with a partner, and compliment improvements in oral reading. The study activities training group learned to work in pairs on independent assignments related to basal reader selections. Students in both groups then worked in pairs on their treatment activities for three 15-minute periods a week for 5 weeks. Post testing by the DRS indicated that the repeated reading group had significantly better oral reading fluency and made significantly fewer semantically inappropriate miscues after treatment, thus suggesting that students were focusing on meaning as they read. Teachers and students reported that they found repeated reading enjoyable and wished to use it frequently.

Koskinen and Blum have developed and studied empirically a practical method of implementing repeated reading in the classroom. Because basal materials were adapted by the students themselves, there was no need for prior teacher preparation beyond the training sessions. Teachers and students alike found the repeated reading strategy beneficial. However, some aspects are puzzling. The target students

were those reading below the third grade level, yet the pretest limits were between 1.6 and 4.5. The DRS includes comprehension questions, but only oral reading fluency was analyzed. Was this a composite score of word recognition and comprehension? Why was comprehension not investigated more thoroughly? Miscues give only an indirect indication that the material read was understood.

Summary. Three sets of authors (Koskinen & Blum, 1984; Lauritzen, 1982; Mathews & Seibert, 1983) have adapted repeated reading for use in the classroom. Lauritzen used a choral reading format; Mathews and Seibert added vocabulary and comprehension components to form a structured remedial summer program; and, Koskinen and Blum employed peer feedback to improve fluency. All methods can be easily implemented in a primary or intermediate classroom. Since only Koskinen and Blum have empirical evidence to back up claims regarding comprehension gain, and that evidence is implied, not direct, more studies need to be conducted where repeated reading is an integral part of the daily language arts program.

Segmented Text

Text which has been segmented into pausal units seems to show promising results for improving comprehension. Allington (1983) reported that helping children learn to read in phrases leads to greater fluency. In his university remedial laboratory, phrase boundaries were marked lightly in the reading material.

Weiss (1983) showed how altering text format to replicate oral discourse would affect the comprehension of social studies information. The subjects were 324 grade 4 students and 324 grade 7 students divided

into good, average, and poor readers. They received booklets at their grade level composed of hard, intermediate, or easier passages. Each booklet had one passage in a pausal phrase format (a new line whenever most adults would pause when reading), one passage in a syntactic phrase format (each noun phrase, verb phrase, or pattern completer on a separate line), and one passage in a standard prose format. Each page was followed by a cloze version of the identical passage to measure comprehension. When the results were tabulated, comprehension scores for the pausal and syntactic phrase formats were significantly higher than comprehension scores for the prose format. Poor readers, reading segmented text comprehended as well as the mean score for average readers reading standard prose. Similarly, average readers reading segmented text comprehended almost as well as good readers reading standard prose.

This study describes an easy instructional method that increases the reading comprehension of textual material. The hypothesis is succinctly stated and the two types of phrase format are carefully delineated. The pausally-phrased passages were segmented by 18 graduate students and checked by 10 more, but it was not mentioned who did the segmenting of text into syntactic phrases. A reliability check was carried out on only three passages. It would be difficult to replicate the text because it is not clear where the material originated or how many passages were used. Weiss mentions that the positive effects of text segmentation continue even when the subjects are involved in repeated reading, but it appears that he is referring to the three different passages read in the booklet rather than the

method of repeated reading. One final criticism is the one-time only focus of the study.

O'Shea and Sindelar (1983) examined whether or not segmented text improves comprehension scores more for low to moderately fluent readers than for highly fluent readers. A pool of 83 grade 1, 2, and 3 students read three grade three stories for one minute each. They then completed two stories that had been developed into maze passages (every fifth word is replaced by a three-word choice). One was in a standard maze format; the other was segmented into noun, verb, and object phrases. At each grade level the fastest and slowest eight students who met certain criteria were included--48 in total. When the maze results were calculated, the mean score on the segmented maze passage was significantly greater than the mean score on the standard passage. There were no significant differences in performance by achievement level. But when all 83 subjects were considered in a canonical correlation analysis, children who read slowly but accurately were likely to score higher on the segmented passage than on the standard passage. The authors recommend segmentation as a supplement to basic instruction. Instead of retyping texts, phrases could simply be separated by vertical lines.

This study achieved results similar to those attained by Weiss, although the repeated reading of segmented text is approached at a different grade level and forms a different perspective (which group would benefit more?). Sampling sizes were large and the design allowed for the control of important factors. Unfortunately the format of the maze was not clear, nor was an example given. Because standards were

identical for all grade levels, different students would have been eliminated across the grade levels (for example, the most fluent grade 3 students and average first graders would not qualify); this may have resulted in skewed scores. Once again, the time span of this study was very short and it is impossible to identify possible long-term benefits.

As suggested earlier in this review, there have been cases of repeated reading being combined with segmented text. When Carbo (1978) taped stories for repeated listening she emphasized logical phrasing to help children learn natural word groupings and to lessen the tendency to read word-by-word. In their second experiment, Fleisher and his colleagues (1979) gave subjects either single word training, phrase training, or no training (control). Phrase training significantly improved cloze performance, but not scores on three other comprehension measures.

In an unpublished pilot study, Carver (1985) compared traditional repeated reading, repeated reading using segmented text, repeated reading plus questioning, and a control (no reading). From a pool of 74 grade 2 students, 16 were chosen who were reading below grade level. Students read short prose selections in either a regular text format or segmented into pausal units. One group was asked a general question after each rereading. Following two weeks of daily 30-minute instruction, subjects were given a posttest IRI. When results were compared with pretest performance, the segmented text group improved the most in terms of word recognition, and the question group was second, but results were not significant. Similarly, the segmented

text and question group had the highest comprehension gains, but again without significance. Use of regular text required more repetition (by approximately 13%) to reach fluency than was required with segmented text. The author concluded that altering text to conform to pausal units allowed students to read both in phrases and more rhythmically, thus with practice over time, requiring fewer rereadings to achieve fluency. Pausal units appeared to speed understanding of the stories. This carried over to increased comprehension in the posttesting.

The original premise of this preliminary study was to investigate the effect of adding two other variables, segmented text and questioning, to repeated reading research. The procedures were explained in detail and the instruments were appropriate for the design. Limitations of the pilot study included the short length of time over which the research was carried out and the small number of subjects. While experimental groups, except for the control group, were randomly assigned to conditions, assignment of subjects within groups was not random. The students in one treatment group appeared to be much stronger.

Summary. Using segmented text has proved to increase comprehension scores when measured by cloze passages (Fleisher et al., 1979; O'Shea & Sindelar, 1983; Weiss, 1983). When segmented text was used in conjunction with repeated reading and measured with a comprehension posttest the results did not reach a significant level (Carver, 1985). Carver's results might have been significant if the study had taken place over a more extended period of time. While the positive benefits of having students read segmented text are not always

supported in the research, it is apparent that dividing text into pausal units is a procedure that merits further study. Such a practice may serve as a viable alternative to modeling fluent reading.

Summary of the Research

Two major areas were explored in this chapter to provide a rationale for the present investigation. First, relevant repeated reading theory and research were examined, with particular regard to long-term reading comprehension gains and the effects of modeling reading. Secondly, the value of segmenting text into pausal units was reviewed, with an eye to employing that technique to enhance the effectiveness of repeated reading practice. Strengths and weaknesses of the various studies in both areas were noted with suggestions for follow-up investigation.

As indicated by the results of the research cited in this chapter, the method of repeated reading has proved to be a useful instructional approach for improving both word recognition accuracy and rate of reading. The comprehension link is not so easily verified. When the eight studies involving comprehension as a dependent variable were compared, only two reported significant comprehension gains (Koskinen & Blum, 1984; Laffey et al., 1980). Of these two, Koskinen & Blum calculated comprehension using indirect measures (semantically correct miscues), not the best indicator of meaning-getting. A further two studies noted significance on some but not all comprehension measures (Carver & Hoffman, 1981; Dahl, 1979). Four research projects (Fleisher et al., 1979; Simon et al., 1976; Spring et al., 1981; Witte, 1980) reported no significant comprehension gains. It appears that research

exploring the repeated reading-comprehension link has had a low success rate. While this may be due to inadequacies in the way comprehension has been measured, rapid decoding may not automatically result in comprehension. Comprehension may depend on more explicit instruction. Further research is still needed to confirm the automaticity theory.

Cueing the subjects to read for understanding was a relatively successful technique for improving comprehension scores in the study that included it (Carver & Hoffman, 1981). Other writers asked questions either during or after repeated reading (Carver, 1985; Fleisher et al., 1979; Lopardo & Sadow, 1982; Samuels, 1979). It seems likely that one or several of these techniques in combination would draw the student's attention to the content of the text and to the need to read for meaning. Cueing students to think about the substance of their reading may be necessary to ensure a comprehension focus.

The modeling of fluent reading, either by having students listen to a teacher (Lauritzen, 1982; Mathews & Seibert, 1983; Witte, 1986), a tape (Carbo, 1978; Chomsky, 1978; Laffey et al., 1980), or a computer (Simon et al., 1976; Martin & Meltzer, 1976) was employed in a number of studies. Demonstrating smooth reading and correct phrasing seems to be of value in encouraging fluency, but it does not always influence understanding. Of the empirical research, only Laffey et al. (1980) reported significant gains in reading comprehension while Martin and Meltzer (1976), Simon and his colleagues (1976), and Witte (1980) did not, although these findings may relate to the comprehension measuring procedures. Modeling is not always practical in a classroom situation since it can be difficult for a teacher to find the time to prepare

taped stories or computer programs and to work with children either individually or in small groups. Further, the equipment may not be readily available, particularly if larger groups of children are involved. Because of the lack of positive results and difficulties with time and equipment, the effects of modeling will not be examined in this study.

If modeling is not readily workable in the classroom, separating text into pausal units is an alternative that might enhance the effectiveness of rereading. Segmented text proved to increase comprehension when tested with cloze passages (Fleisher et al., 1979; O'Shea & Sindelar, 1983; Weiss, 1983) but not when questions and oral retellings were used to measure comprehension performance (Carver, 1985; Fleisher et al., 1979). When segmented text was combined with repeated reading, comprehension was not significantly improved for Carver (1985), but showed promise. Further experimentation should be carried out to demonstrate the effects of the repeated reading of segmented text on a long-term basis.

Computers were used to supplement repeated reading in three studies. Carver and Hoffman (1981) produced significance on one of two comprehension measures, Simon and his colleagues (1976) obtained only minimal gains, while Martin and Meltzer (1976) tested only fluency, not comprehension. As well as not being effective in regard to improving comprehension, repeated reading computer programs can be expensive and very difficult to prepare, especially complicated ones similar to those used by Carver and Hoffman (1981) or Simon et al. (1976). This study did not employ computers.

According to Allington (1983), repeated reading is an effective method for improving reading fluency that is of great value for the classroom teacher, yet little research has been carried out in classrooms by classroom teachers. In the three reports that advocated repeated reading in classroom settings (Koskinen & Blum, 1984; Lauritzen, 1982; Mathews & Seibert, 1983) only Koskinen and Blum used verifiable research. With the growing emphasis on teacher-researchers (Allen, Combs, Hendricks, Nash, & Wilson, 1988; Chall, 1986), it would be beneficial to have the method and materials organized so that teachers or volunteers could easily use repeated reading to enhance student reading performance.

The present investigation builds on the findings of repeated reading and segmented text research. Both the study and the materials have been designed for easy classroom implementation. The study examines whether or not repeated reading practice over a period of several months will improve comprehension performance. It also examines whether or not repeated reading of segmented text is superior to repeated reading alone for enhancing comprehension. As part of instruction, students are cued to read for understanding and asked to tell back each story. It is anticipated that using multiple measures of comprehension will increase the likelihood of establishing the effect of repeated reading practice on text comprehension and help to prove or disprove Samuels (1977) theory that when automaticity in decoding is reached, processing space is freed and more attention to the ideas in the text leads to improved comprehension.

Chapter 3

PROCEDURES

The purpose of this study was to investigate the effects of repeated reading practice and the repeated reading of segmented text on second grade students' oral reading (word recognition accuracy and rate) and comprehension (total number of ideas recalled, number of main ideas recalled, and cued recall scores). It was anticipated that the rereading of material would lead to improved comprehension and that rereading segmented text might lead to even greater comprehension gains.

This chapter is concerned primarily with delineating the procedures used in data gathering. First, the population is described while an explanation of materials and approaches to both training and testing follows. Information regarding instrument-scoring is presented next. The chapter concludes with an account of how data were analyzed.

Method

Subjects

The subjects in this study were 30 students from two grade 2 classrooms in a suburban Winnipeg elementary school. The socio-economic profile of the school community was predominantly middle class.

The 30 subjects were selected from a pool of 51 grade 2 students in two classrooms. All students were given the comprehension section of the Gates-MacGinitie Reading Test, Primary B, Form 1 (1964), to determine the level at which each student was reading: below, at, or above grade level, according to the Gates-MacGinitie grade score

equivalents. Of the total number of students tested, 15 were considered reading at grade level, that is, their scores on the Gates-MacGinitie comprehension subtest fell within the grade 2 range; 16 were below the grade 2 level; and, 20 subjects scored above grade level. Thus the subjects chosen to participate in the study were the 31 at and below grade level students. One student in the below grade level group was subsequently eliminated from the pool because of irregular school attendance. A total of 30 subjects, consequently, took part in the study.

The 30 grade level and below grade level readers were assigned to the three experimental groups, the repeated reading group (RR), the repeated reading plus segmented text group (RR-S), or the control group, stratified according to academic achievement level and sex after a procedure recommended by Slavin (1983). Accordingly, the 18 boys and 12 girls were ranked separately from lowest to highest based on their comprehension scores and grouped into sets of three. To assign students to one of the three groups a die was tossed. A die reading of 1 or 2 indicated that the student should be assigned to RR, 3 or 4 indicated RR-S, and 5 or 6 indicated control. Alternating the triads from top to bottom, and for boys and girls, each one of the students from each set was assigned at random to one of the three treatment groups. See Figure 3.1 for a visual representation of the procedure.

The repeated reading subjects read regular prose at their instructional level individually for approximately 10-15 minutes every other day. The repeated reading plus segmented text subjects read the same prose segmented into pausal units. The control subjects read

Figure 3.1

Random Assignment Stratifying on Achievement Level and Sex

Achievement Rank	Boys	Girls
Lowest	1. RR-S	1. C
	2. C	2. RR
	3. RR	3. RR-S
	4.	4.
	5.	5.
	6.	6.
	7.	7.
	8.	8.
	9.	9.
	10.	10.
	11.	11.
	12.	12.
	13.	
	14.	
	15.	
	16. RR-S	
	17. RR	
Highest	18. C	

regular prose at their instructional level for approximately 5-10 minutes every second day individually and silently, without following the repeated reading procedure.

Instructional Materials

The short prose selections to be used for repeated reading practice were selected from a variety of primary basal readers (Copp-Clark, Canadian Reading Development Series; Scott-Foresman, New Open Highways; Gage, Expressways; Ginn, 360), and primary level interest series (Ginn, Magic Circle; Nelson, Ventures; Scott-Foresman, Reading Unlimited; Encyclopaedia Britannica, LEIR kit). These stories, chosen by the investigator according to their appeal for children, were graded according to the Spache (1953) readability formula and grouped by grade level. Selections were then divided into 100-word passages (or slightly longer to complete sentences or maintain story sense). There were approximately 50-100 word passages for each of the following levels: (grade 1.0-1.9, 2.0-2.3, 2.4-2.9, 3.0-3.9).

A baseline reading level for each student was established by administering the Standard Reading Inventory (SRI). Each student then began training based on the instructional level suggested by the SRI performance. The control group read these selections as well. (Sample passages can be found in Appendix A.)

For the repeated reading plus segmented text treatment group, the same prose passages were retyped with each sentence starting on a new line and a 3-4 space interval between pausal units. (See Appendix B for a sample passage). The pausal unit breaks were determined by the investigator in consultation and agreement with a master's-level

graduate student in reading.

Instructional Procedures

Half of the students in each group read individually every day in a small room off the classroom under the supervision of a trained parent volunteer. The 20 students in the two treatment groups (RR, RR-S) thus participated in the experiment for approximately 10-15 minutes every other day for a ten week period. Students read either regular prose (RR) or segmented prose (RR-S) at their instructional level depending upon the group to which they had been assigned. For each passage, speed and number of errors were marked on a graph.

When the criteria of 100 words per minute was met for each passage, students recounted the story in their own words, answered questions to elicit responses to omitted details, and then, in the same session, proceeded to practice the next passage. When the student made a word recognition error, the correct word was supplied (Rose, 1982). The repeated reading was continued in this fashion during each session until a total of five readings had been completed. When one level of prose material was completed the student went on to the next. In the event that this criterion proved too difficult, 50-word passages with a 35-second criterion (85 words a minute) were available. Although this provision had been made (for students who might experience difficulty reaching the criterion of reading 100 words in one minute) it was found not to be necessary since all students participating in the study were able to meet the initial standard.

The 10 students in the control group participated in the experiment for approximately 5-10 minutes every other day. Subjects

silently read the material independently in the presence of a parent volunteer (as a placebo condition) and asked for any words they did not know. They read five selections each day of treatment. Instruction for all groups continued for a period of 10 weeks. There were a total of 25 sessions for each student.

As indicated, to control for teacher effects, the two classroom teachers did not work directly with the children. Rather, five parent volunteers, a different volunteer for each day of the week, were trained in the repeated reading technique by the investigator. The training consisted of an after school session in which the theory behind repeated reading was given, proper repeated reading methodology was modeled, and the volunteers received feedback on simulated practice. Observation and conferencing continued throughout the study and student charts and graphs were monitored daily. The parent volunteers were encouraged to give positive reinforcement to the children regarding their progress.

Test Instruments

Gates-MacGinitie Reading Test. As previously explained, the comprehension portion of the Gates-MacGinitie Reading Test , Primary B, (1964) was given as a group test to determine which students fitted the criterion of unskilled or average readers and to rank the students by achievement level. In a review of the Gates-MacGinitie, Van Roekel (1972) commended the construction of the comprehension subtest because questions required inferential abstract thinking, while Powell (1972) concluded that the Gates-MacGinitie would provide usable data on comprehension achievement.

Standard Reading Inventory. The Standard Reading Inventory (SRI) (McCracken, 1966) was given to each participant individually to provide a pre- and post-treatment comparison based on the following components:

- 1) instructional level
- 2) word recognition accuracy
- 3) rate of oral reading
- 4) the total number of ideas recalled in uncued passage retelling
- 5) the total number of main ideas present in the retelling
- 6) cued recall responses (question answering).

The number of ideas and main ideas in each SRI passage was designated by the investigator in consultation with an Education professor. The SRI was chosen because it is normed and the primary section consists of three levels for grade 1 and two each for grades 2 and 3. Thus the instrument can monitor growth of half a year or less. Botel, Bradley, and Kashuba (1970) found that the Spache (1953) readability measures and performance on the SRI correlated highly when the grade levels of one basal reading series were used as a criterion. Form A was given as a pretest before the repeated reading training and Form B was given as a posttest. Pre- and posttests were administered individually over a two week interval by the investigator.

Scoring for Change in Instructional Levels

The student's instructional level is considered to be the highest level at which each student performed in the instructional level range. In this study each subject had to meet the SRI criteria for word recognition accuracy (95% and above) and cued comprehension performance (70% and above). Pre- and posttest instructional levels were compared

and given a numerical value as a portion of the year or years that showed change. The numerical value from preprimer to primer, and from primer to level one was .25; other gradation, for example 2.0 to 2.5, were .5. Changes from pre- to posttest were totalled for each subject. For example, if the subject's instructional level was 1.5 (second half of grade 1) on the pretest and improved to 3.0 (first half of grade 3) the score for instructional level change would be 1.5. In two cases there was a minus score when students had not done as well on the posttest as the pretest.

Scoring for Oral Reading Measures

Measures obtained from the oral reading component of the SRI were word recognition accuracy, reading rate, and a composite index for both based on the scores and any changes in instructional level.

Word recognition accuracy. Word recognition accuracy was considered to be the words in the SRI passage read correctly, written as a percentage. Words read incorrectly and omissions were counted as errors, but not repetitions or self-corrections.

Composite index for word recognition accuracy. A composite index score was calculated for word recognition accuracy using the formula: $CI = \text{word recognition score} + [\text{score} \times \text{change in instructional level}]$ (CI = Composite Index). This was computed since the range of possible scores was very narrow (between 95 and 100%) and it was conceivable that little difference between groups would be discerned. Such a composite index would give weight to the scores of a student who had improved one whole grade level, for example, over that of a student whose instructional level had not changed.

Reading rate (automaticity). Reading rate was calculated as the number of words in a passage divided by the time (in seconds) taken by each student to read SRI passages multiplied by 60.

Composite index for reading rate. A composite index was developed for rate to help identify treatment changes for students who had improved their instructional levels. It was computed as:

CI = reading rate score + [score X change in instructional level]
(CI = Composite Index).

Scoring for Comprehension Measures

The measures obtained from the comprehension component of the SRI were the total number of ideas in uncued recall, the number of main ideas in uncued recall, cued recall, and the composite indices for all three based on the scores and changes in instructional level.

Total number of ideas in uncued recall. Comprehension was first measured by examining the total number of ideas recalled in SRI passage oral retellings. Scoring templates developed for the SRI in which the total number of ideas for each passage, the number of main ideas, and acceptable answers to comprehension questions (cued recall) were listed. (See Appendix C for a sample template.) Text was analyzed into idea units using a modification of a text-analysis procedure developed by Meyer (1975). The templates were developed in collaboration with an Education professor. Subjects were given one point for each idea that they remembered during the retelling of the selection. Scores were transformed into percentages calculated by comparing the number of ideas recalled to the total number of ideas in the selection.

Number of main ideas in uncued recall. The second method of measuring comprehension was through assessing the total number of main ideas recalled from the SRI passage at each subject's instructional level. Main ideas were those ideas or combinations of ideas that expressed the gist of the passage. Main ideas were starred in the scoring templates, again in collaboration with an Education professor. (See Appendix C.) Scores were calculated as a percentage of the number of main ideas recalled.

Cued recall scores. After students retold a passage from the SRI they were asked the 10 SRI questions (5 in the case of the preprimer passages). Suggested answers were prepared ahead of time to maintain scoring consistency. Scores were given as a percentage of the number of questions answered correctly.

Composite indices. Composite indices were computed for the total number of ideas, the number of main ideas and cued recall. The formula followed was:

$$CI = \left\{ \begin{array}{l} \text{total number of ideas} \\ \text{number of main ideas} \\ \text{or cued recall} \end{array} \right\} \text{ score} + [\text{score} \times \text{change in instructional level}]$$

(CI = Composite Index).

The composite indices were formulated to give weight to students' uncued and cued recall scores where the students' instructional levels had shown growth. Since cued recall scores fell within a fairly narrow range (between 70-100%) it could have been possible that little difference would be noted between groups.

Inter-rater reliability. In order to establish the reliability of the SRI comprehension scores, scoring of the questions (cued recall) and the total idea and main idea protocols (uncued recall) for 10% of the post-treatment passages were subsequently marked by two independent judges. Pearson product-moment correlations to establish inter-rater reliabilities were computed for the total number of ideas, the number of main ideas, and cued recall scores. Inter-rater reliabilities ranged from 0.96 for the total number of ideas and cued recall scores to 0.99 for scoring main ideas. This established the reliability of the investigator's scores, which were used in the subsequent analysis.

Design and Analysis

The study employed a 3 (treatment) X 2 (level of competency) randomized factorial design. The independent variables were:

- 1) treatment (RR, RR-S, and control)
- 2) reading achievement (at or below grade level).

The dependent variables were:

- 1) change in instructional level
- 2) word recognition accuracy scores
- 3) composite index scores for word recognition accuracy
- 4) reading rate (automaticity)
- 5) composite index scores for reading rate
- 6) total number of ideas in uncued recall
- 7) composite index scores for total number of ideas
- 8) number of main ideas in uncued recall
- 9) composite index scores for number of main ideas
- 10) cued recall scores

11) composite index scores for cued recall.

A two-way analysis of variance (Kalt, 1985) was conducted (by treatment, by level, and treatment X level) to compare the posttest scores of the three groups and to establish the effects of training for readers at and below grade level on each of the dependent variables. T-tests on all pairs of means were subsequently undertaken to locate the source of significant main effects.

Summary

This chapter has described the subjects who made up the sampling group and identified the methods used to implement the study. The instructional materials and the approach for implementing treatments were outlined. The pre- and posttest measures used to gauge change and the method of scoring were delineated. The chapter concluded with an explanation of data analysis procedures. The resultant statistical analysis and findings are presented in Chapter 4.

Chapter 4

RESULTS

The purpose of this study, as previously stated, was to investigate the effects of repeated reading and the repeated reading of segmented text on the oral reading performance and comprehension of second grade students. Thirty subjects were randomly assigned to either of two treatment groups or a control group, stratified according to reading achievement level and sex. Each group was composed of ten students, five of whom read at grade two level and five who read below that level. Students in the repeated reading group (RR) received individual repeated reading practice every second day and retold stories once the criterion rate had been achieved. Students in the repeated reading of segmented text group (RR-S) received similar reading practice but the text was segmented into pausal units. The control group read the regular repeated reading material silently in an individual setting and did not tell back the story. Prior to, and after 10 weeks of treatment, students were tested individually with the Standard Reading Inventory (SRI) (1966).

Using data from the SRI, the reading performance of the RR group, the RR-S group, and the control group was compared. Null hypotheses examined:

- 1) the change in instructional level from pre- to posttest
- 2) oral reading measures at each student's posttest instructional level including:
 - a) word recognition accuracy scores
 - b) a composite index for word recognition accuracy scores

- c) reading rate
 - d) a composite index for reading rate
- 3) comprehension measures at each student's posttest instructional level including:
- a) the total number of ideas in uncued recall (passage oral retellings)
 - b) a composite index for the total number of ideas
 - c) the number of main ideas in uncued recall (oral retellings)
 - d) a composite index for the number of main ideas
 - e) cued recall scores (responses to questions)
 - f) a composite index for cued recall scores.

Since students' initial reading levels ranged from preprimer to 2.5 and students received training on passages commensurate with their reading instructional levels, composite indexes were used to give weight to changes in reading performance from pretest to posttest to detect subtle differences in either fluency or comprehension not evident if level were not taken into account. Data were analyzed using a 3 X 2 ANOVA (treatment and level). Where significance was found for treatment, a t-test was administered to pinpoint the source.

Analysis of Data

Change in Instructional Level

When analysis of variance procedures were conducted on posttest results to determine whether or not there was a change in instructional level for students in either of the two treatment groups or the control group, as depicted in Table 4.1, there were highly significant Table

Means and Standard Deviations for Treatment

Variable	RR (n=10)	RR-S (n=10)	C (n=10)	F-Value (5,24)
Change in level	1.38 (0.38)	1.35 (0.72)	0.18 (0.55)	14.70 p<.0001
Word recognition	97.10 (1.73)	97.30 (2.06)	95.00 (5.92)	1.26 p>.05
CI word recognition	230.43 (35.49)	228.65 (69.98)	112.15 (55.38)	15.25 p<.0001
Reading rate	73.60 (26.46)	65.60 (25.04)	72.40 (31.46)	0.28 p>.05
CI reading rate	173.95 (63.39)	156.93 (74.79)	83.10 (52.15)	6.78 p<.005
Number of ideas	52.20 (20.47)	64.70 (16.56)	34.30 (16.33)	7.32 p<.005
CI number of ideas	121.08 (43.80)	151.25 (60.30)	36.13 (30.33)	16.96 p<.0001
Number of main ideas	69.30 (26.70)	71.60 (25.43)	48.20 (23.41)	2.66 p>.05 (p=.09)
CI main ideas	162.28 (61.92)	173.28 (77.24)	56.50 (42.99)	11.05 p<.0005
Cued recall	83.50 (13.55)	94.00 (4.59)	74.00 (12.43)	10.01 p<.001
CI cued recall	199.88 (51.46)	220.00 (65.53)	87.00 (44.59)	17.47 p<.0001

Note. Standard Deviations are in parentheses.

CI = Composite index

RR = Repeated reading group

RR-S = Repeated reading of segmented text group

C = Control group

differences ($F(5,24) = 14.70, p < .0001$). After t-tests were conducted on the means to locate the source of the variance, results for the RR and RR-S groups showed significantly more improvement than results for the control group. Positive changes between the two treatment groups were not significantly different themselves, however. The significant t-values for treatment can be seen in Table 4.2.

When the performance of competent and less competent students was examined for changes in instructional level, no significant differences between the performance of readers at and below grade level were found across the treatment conditions. There was also no significant interaction between treatment and reading performance level. These results are presented in Tables 4.3 and 4.4 respectively. Complete ANOVA calculations are contained in Appendix C.

Oral Reading Measures

Word recognition accuracy. The analysis of variance carried out on the posttest performance of the three groups indicated no significant main effects for word recognition accuracy scores ($F(5,24) = 1.25, p > .05$). (See Table 4.1.) As shown in Table 4.3, the differences in word recognition accuracy between readers at and below grade level did not reach significance, although word recognition accuracy performance approached significance for at grade level readers ($F(5,24) = 3.00, p = .09$). As in the case of reading levels, there was no significant interaction between level and treatment (Table 4.4).

Composite index for word recognition accuracy scores. The calculation of a composite index for word recognition accuracy, taking into account the effect of possible changes in instructional level,

Table 4.2

Significant T-Values for Treatment (df=18)

Variable	RR & C	RR-S & C	RR & RR-S
Change in level	5.67 (p<.005)	4.10 (p<.005)	NS
CI word recognition	5.69 (p<.005)	4.13 (p<.005)	NS
CI rate	3.50 (p<.005)	2.56 (p<.01)	NS
Number of ideas	2.16 (p<.025)	4.13 (p<.005)	NS
CI ideas	5.04 (p<.005)	5.39 (p<.005)	NS
CI main ideas	4.44 (p<.005)	4.18 (p<.005)	NS
Cued recall	1.63 (a)	4.77 (p<.005)	2.32 (p<.025)
CI cued recall	5.24 (p<.005)	4.51 (p<.005)	NS

CI = Composite index

RR = Repeated reading group

RR-S = Repeated reading of segmented text group

C = Control group

NS = No significance

Means for Level of Reading Performance

Variable	at grade (n=15)	below grade (n=15)	F-Value (5,24)
Change in level	1.07	0.87	0.94 p>.05
Word recognition	97.60	95.33	3.00 p=.09
CI word recognition	201.60	179.22	1.25 p>.05
Reading rate	83.13	57.93	7.22 p<.01
CI reading rate	168.75	107.23	8.25 p<.01
Number of ideas	47.27	53.53	0.92 p>.05
CI number of ideas	93.82	111.82	1.16 p>.05
Number of main ideas	60.67	65.40	0.27 p>.05
CI main ideas	122.52	138.85	0.53 p>.05
Cued recall	83.67	84.00	0.01 p>.05
CI cued recall	173.00	164.92	0.17 p>.05

CI = Composite index

RR = Repeated reading group

RR-S = Repeated reading of segmented text group

C = Control group

Table 4.4

Means for Treatment by Level

Variable	Level	RR (n=5)	RR-S (n=5)	C (n=5)	F-Value (5,24)
Change in level	at	1.50	1.25	0.45	1.11 p>.05
	below	1.25	1.45	-0.10	
Word recognition	at	97.20	98.00	97.60	1.33 p>.05
	below	97.00	96.60	92.40	
CI word recognition	at	242.75	220.65	141.40	1.15 p>.05
	below	218.10	236.65	82.90	
Reading rate	at	83.20	82.20	84.00	0.20 p>.05
	below	64.00	49.00	60.80	
CI reading rate	at	205.45	187.80	113.00	0.00 p>.05
	below	142.45	126.05	53.20	
Number of ideas	at	44.00	60.20	37.60	1.08 p>.05
	below	60.40	69.20	31.00	
CI number of ideas	at	105.35	130.25	45.85	1.28 p>.05
	below	136.80	172.25	26.40	
Number of main ideas	at	55.60	73.00	53.40	1.60 p>.05
	below	83.00	70.20	43.00	
CI main ideas	at	133.05	158.50	76.00	1.66 p>.05
	below	191.50	188.05	37.00	
Cued recall	at	78.00	92.00	81.00	4.16 p<.05
	below	89.00	76.00	67.00	
CI cued recall	at	197.75	206.25	115.00	1.58 p>.05
	below	202.00	233.75	59.00	

CI = Composite index
 RR-S = Segmented text group
 at = at grade level readers

RR = Repeated reading group
 C = Control group
 below = below grade level readers

produced highly significant differences between treatment groups ($F(5,24) = 15.25, p < .0001$), as indicated in Table 4.1. A t-test analysis indicated that scores were significantly higher for the RR and RR-S groups compared to the control group but not to each other (Table 4.2). There were no significant differences between the performance of the at and below grade level readers across treatments and no significant interactions between the performance of these readers in any of the three groups. This information is presented in Tables 4.3 and 4.4.

Reading rate. With respect to oral reading rate, shown in Table 4.1, there were no significant differences between the performance of the two experimental and control groups. However, as displayed in Table 4.3, there was a significant differences in performance by level ($F(5,24) = 7.22, p < .01$) in favour of those students reading at grade level. There was no significant interaction between treatment and reading level (Table 4.4).

Composite index for rate. As indicated in Table 4.1, for the composite index for reading rate, there was a significant difference between the groups ($F(5,24) = 6.78, p < .005$) favouring both the RR and RR-S groups over the control group. There were, however, no significant differences between the two treatment groups (RR and RR-S) (Table 4.2).

When the composite indices for rate between competent and less competent readers were compared, a significant difference was found, with those subjects at grade level reading significantly more words per minute. There were no significant interactions between competency level and treatment. Means and standard deviations for at and below

grade level readers and the means for interaction effects between treatment and reading competency are presented in Tables 4.3 and 4.4 respectively.

Comprehension Measures

Total number of ideas in uncued recall. For the total number of ideas recalled in oral retelling (without cues), there was a significant difference between the groups ($F(5,24) = 7.32, p < .005$) (Table 4.1). As indicated in Table 4.2, t-tests confirmed that students in the two repeated reading groups remembered significantly more story ideas than students from the control group, but not more than each other. There were, however, no significant differences between the performance of at and below grade level readers. (See Table 4.3.) Similarly, there were no significant interactions between reading level and treatment for the total number of ideas recalled.

Composite index for total number of ideas. Analysis of variance indicated highly significant differences between the experimental and control groups in terms of the composite index in regard to the total number of ideas recalled ($F(5,24) = 16.96, p < .0001$). (Refer to Table 4.1.) T-tests revealed once again that students in the RR and RR-S groups had superior scores compared to students in the control group, but not to each other (Table 4.2). As depicted in Table 4.3, there was no significant difference between at and below grade level readers and, as indicated in Table 4.4, no significant interactions between achievement level and treatment.

Number of main ideas in uncued recall. As shown by the total number of main ideas found in oral retelling, the results of the

analysis of variance on posttest scores indicated that although treatment had an appreciable effect on comprehension and memory for text the effects were not strong enough to be significant ($F(5,24) = 2.66, p = .09$). There was no significant difference in performance by level and no significant interaction between level of reading achievement and treatment received. These figures are shown in Tables 4.3 and 4.4.

Composite index for number of main ideas. Using the composite index for the total number of main ideas, that take into account both level and retelling scores, the analysis revealed a significant effect for treatment ($F(5,24) = 11.05, p < .0005$) (Table 4.1). Both treatments were effective. More main ideas were recalled in both the RR and RR-S treatment groups than in the control group, but performance in the two treatment groups was not significantly different from each other. T-values for treatment are presented in Table 4.2. There was no significant difference between the performance of at and below grade level readers, and no significant interaction effects. (Refer to Tables 4.3 and 4.4.)

Cued recall scores. When the results of the cued recall scores at the students' instructional levels were analyzed, it was found that the performance of the two treatment groups was significant ($F(5,24) = 10.01, p < .001$). Closer analysis using t-test analyses uncovered a change in the pattern of significance. Although the scores of students in the RR groups were very close to significant, not only were the RR-S scores significantly higher than those of the control group, but they were also significantly higher than those of students in the RR group.

In this category only, RR-S cued recall scores were significantly higher than RR cued recall scores. These t-values are reproduced in Table 4.2.

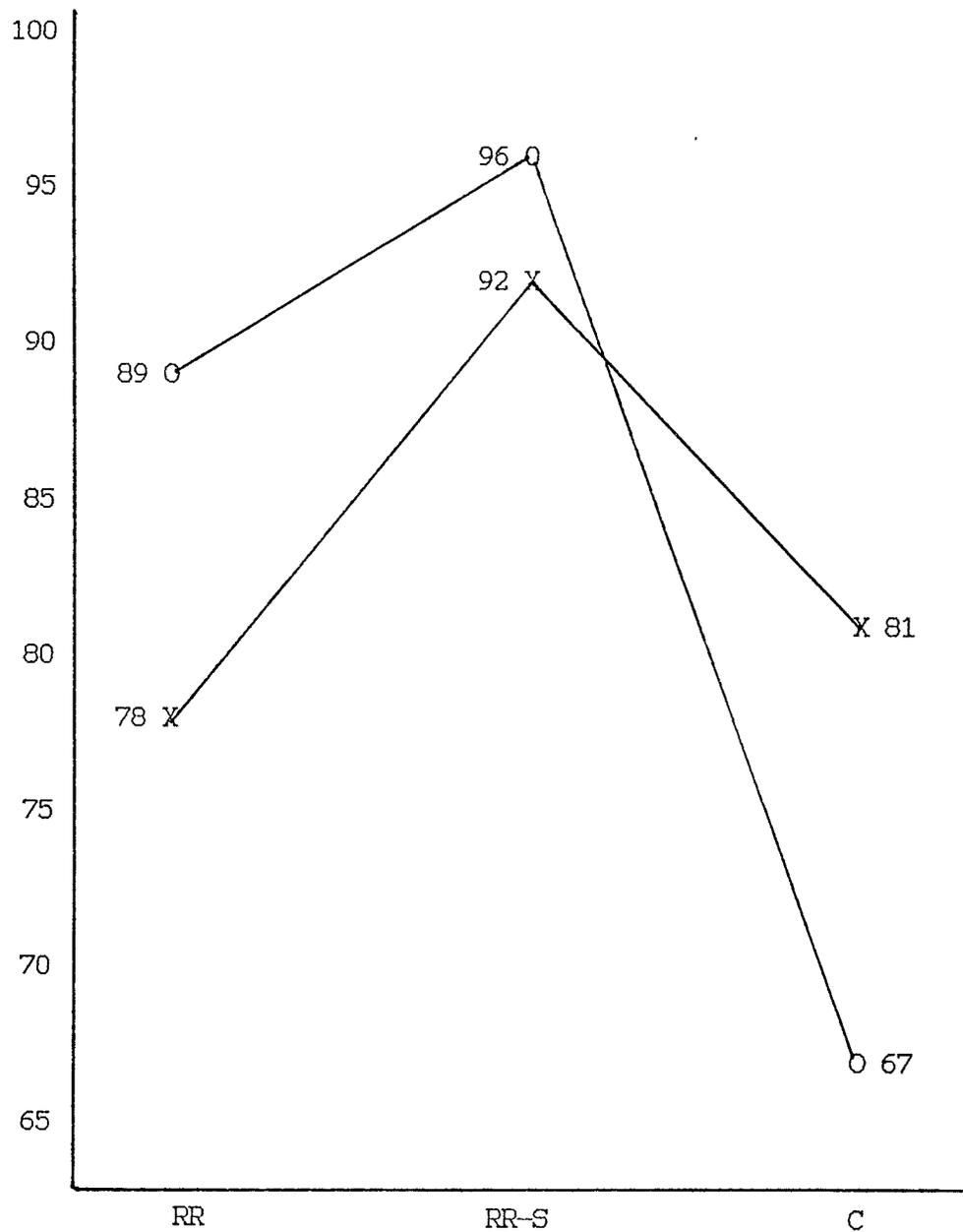
When the cued recall scores were examined across ability levels, findings indicated that there was no significant difference between the performance of at and below grade level readers, as shown in Table 4.3. There was, however, significant interaction between treatment group and level. Table 4.4 contains relevant information regarding the F-values and means, while the source of the interaction is diagrammed in Figure 4.1.

Further analysis using t-tests (Table 4.5) established that both styles of repeated reading produced higher cued recall scores for below grade level readers in the control group. Again the performance of the RR and RR-S groups did not differ significantly from each other. In contrast, for at grade level readers, RR-S scores were significantly higher than both RR and control scores, indicating that at grade level students achieved superior results when rereading segmented text than naturally-occurring text.

Composite index for cued recall scores. The last dependent variable to be studied was the composite index for cued recall. Table 4.1 demonstrates that there was a highly significant effect for treatment ($F(5,24) = 17.47, p < .001$). Further inspection of the data, as substantiated in Table 4.2, reveals that the RR and RR-S treatment group scores were significantly higher than control group scores, but not significantly higher than each other. There was no significant

Figure 4.1

Interaction of Treatment by Level for Cued Recall Scores



X = at grade level O = below grade level

RR = Repeated reading group C = Control group

RR-S = Repeated reading of segmented text group

Table 4.5

Significant T-Values for Treatment X Level in Cued Recall (df=8)

Level	RR & RR-S	RR & C	RR-S & C
below grade	NS	2.53 p<.025 (for RR)	5.25 p<.005 (for RR-S)
at grade	2.65 p<.015 (for RR-S)	NS	2.32 p<.025 (for RR-S)

RR = Repeated Reading group

RR-S = Repeated Reading of Segmented Text group

C = Control

NS = no significance

difference between the performance of at and below grade level readers and, as was the general case in all measures except for cued recall, no significant interaction effects. Tables 4.3 and 4.4 show the outcome of these computations for level and treatment by level.

Summary

When analysis of variance procedures were conducted on the eleven dependent variables to compare the effects of treatment on two experimental and one control group, significance was found in eight of these variables in favour of the treatment groups: change in level, composite index for word recognition, composite index for rate, total number of ideas, composite index for total number of ideas, composite

index for number of main ideas, cued recall, and composite index for cued recall. In addition, significance was approached for treatment regarding the number of main ideas recalled. On all measures except the measure of cued recall, both treatments (RR and RR-S) resulted in significantly higher performance than the performance of the control group, but were not significantly different from each other. For cued recall, the RR-S treatment group had significantly higher scores than the RR and control groups, although the cued recall performance of the RR group approached significance when compared to the performance of the control group. Performance of the RR-S group was superior to that of the RR group for cued recall.

As was expected, at grade level readers performed significantly better than below grade level readers for reading rate and the composite index for reading rate. As well, scores for at grade levels approached significance for word recognition accuracy when compared with the scores of below grade level subjects.

Calculations for the interaction between treatment assignment and level of reading performance identified cued recall as the only variable which had significant interaction between treatment and level. Both methods of repeated reading were equally effective for below level readers. RR-S was more successful than RR for at grade level readers.

In summary, treatment affected most of the dependent variables significantly, and all the dependent variables when composite indices were applied. Students reading at grade level improved significantly more in rate and its composite index, and when treatment interacted with level, students reading at grade level made significant gains on

cued recall in the segmented text group compared to the regular repeated reading group. To conclude, the empirical evidence of this study supports the hypothesis that repeated reading is a successful technique for promoting improved oral reading and reading comprehension skills. The repeated reading of segmented text was supported as being more advantageous than repeated reading alone for at grade level readers only for comprehension as measured by questions. This finding deserves further study.

Chapter 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The purpose of this study was to investigate the effects of repeated reading on second grade students' oral reading (word recognition accuracy and rate) and comprehension performance (total number of ideas recalled, number of main ideas recalled, and cued recall scores). An additional area of concern was to explore whether or not the repeated reading of segmented text results in even greater comprehension gains.

Theoretical assumptions supported by empirical research underlie this study. According to LaBerge and Samuels (1974), at the accuracy stage of reading when the mind focuses on letters and sounds, little processing space remains to allow the integration of ideas from the text. However, at the automatic stage of reading processing space is freed up for the comprehension of ideas. Automaticity can be measured by tracking reading rate. Perfetti and Lesgold (1979) agree that a memory bottleneck may block comprehension if undue attention is required to decode words. These authors give three suggestions to decrease the working bottleneck for readers: develop long-term memory, increase speed and automaticity, and improve skill in reading in thought units or in chunking information. Schreiber (1980) maintains that rereading whole text allows the reader to discover the appropriate phrasing and prosody, which in turn increases understanding.

Recent research provides evidence that repeated reading is a successful approach for improving both word recognition accuracy and automaticity or rate. However, studies have not verified that the

practice of repeated reading increases the comprehension of text. Two of the eight reported studies that focused on comprehension achieved significant results, while a further two demonstrated significance on some of the comprehension measures. Possible explanations accounting for the failure of these studies to achieve comprehension gains include: the repeated reading of word lists is an inappropriate instructional procedure; studies are of very short duration; comprehension gains do not come automatically after increases in rate; and, comprehension must be taught directly.

Studies suggest that cueing subjects to read for understanding and requiring readers either to answer questions or recall the story after practice lead to improved comprehension scores as students perceive the need to read for meaning. Research involving the reading of text segmented into pausal units has established that comprehension, when measured with cloze passages, is significantly enhanced. Combining repeated reading with segmented text has shown promise for improving comprehension, but has not been sufficiently documented.

To explore the effects of repeated reading and the repeated reading of segmented text on second grade students' oral reading and reading comprehension, the following null hypotheses were examined.

Given three groups of grade two students each comprised of at and below grade level readers where one treatment group received repeated reading practice (RR), another received practice in the repeated reading of segmented text (RR-S), and the third acted as a control,

First, regarding instructional level change: There is no significant difference in the change of instructional level between the

three groups (RR, RR-S, and control) as measured by the pre- and post-treatment administration of the Standard Reading Inventory (SRI) (McCracken, 1966).

Second, regarding oral reading: There is no significant difference in oral reading performance between the three groups (RR, RR-S, and control) as measured by the oral reading component of the SRI as far as the following variables are concerned:

- 1) word recognition accuracy scores
- 2) a composite index for word recognition accuracy
- 3) reading rate
- 4) a composite index for reading rate.

Third, regarding comprehension: There is no significant difference in the comprehension between the three groups (RR, RR-S, and control) as measured by the comprehension component of the SRI as far as the following variables are concerned:

- 1) the total number of ideas present in uncued recall (passage oral retellings)
- 2) a composite index for total number of ideas
- 3) the number of main ideas in uncued recall (passage oral retellings)
- 4) a composite index for number of main ideas
- 5) cued recall (responses to questions)
- 6) a composite index for cued recall.

This chapter summarizes the findings related to the hypotheses and draws conclusions from the results. Implications for classroom practice and further research follow.

Summary of Research Findings

Results for Change in Instructional Level

The first hypothesis was concerned with possible changes in instructional level between the three groups after 10 weeks of treatment. The results when analysis of variance procedures and matched pairs t-tests were conducted revealed that the repeated reading of both regular and segmented text was superior to the non-repetitive, non-retelling reading of the control group. These results confirmed the investigator's hypothesis that rereading text leads to gains in overall instructional level, which combines word recognition accuracy and cued comprehension scores. These results are not supported specifically in the repeated reading literature as no previous study has compared informal reading inventory instructional level change, with the exception of the Gonzales and Elijah (1975) investigation which was limited to research into the effects of rereading on word recognition performance and the resulting designation of instructional reading levels.

It was anticipated that rereading segmented text would possibly lead to even greater comprehension gains than the rereading of naturally-occurring text, but this hypothesis was not substantiated by the analysis of data. With respect to at and below grade level readers, there were no significant differences in performance across treatments and no significant interaction between treatment and reading level.

Results of Oral Reading Measures

When data on word recognition accuracy, automaticity or rate, and

the composite indices for both were analyzed, the three groups did not differ significantly in accuracy and rate. The outcome for word recognition was to be expected because the range of scores at the instructional level was very narrow—between 95 and 100%. After changes in instructional level were factored into accuracy and rate scores using a formula to construct composite indices, compared to the scores of the control group repeated reading and the repeated reading of segmented text produced significant results. Yet the rereading of segmented text was not superior to the rereading of unsegmented text.

The level of student reading achievement had an effect on oral reading outcomes. As would be expected, at grade level readers had significantly higher scores for automaticity or rate and the composite index for rate than below grade level readers, although it was hoped that below level readers would benefit more substantially from repeated reading practice than at level readers. Word recognition accuracy scores of at grade level readers approached but did not reach significance compared to those of below grade level readers whose gains were not significant. No significant interactions were noted between treatment and performance by level.

Results for Comprehension Measures

The key area of research in this study was whether or not training in repeated reading facilitated comprehension performance and further, whether the repeated reading of segmented text led to even greater comprehension gains. Comprehension performance was assessed through six measures: total number of ideas recalled, number of main ideas recalled, cued recall scores, and the composite indices of each,

calculated using a formula based on changes in instructional level. On four of the measures (total number of ideas, composite index for total number of ideas, composite index for main ideas, and composite index for cued recall) the repeated reading and repeated reading of segmented text groups had significantly higher scores than the control group, but were not significantly different from each other. Scores for the number of main ideas recalled came close to reaching significance, while for cued recall, the repeated reading of segmented text scores were significantly superior to repeated reading alone and to the performance of the control group.

These findings are consistent with those of other researchers (Carver & Hoffman, 1981; Dahl, 1979; Koskinen & Blum, 1984; Laffey et al., 1980) who noted significance on some or all comprehension measures. The findings, moreover, support the belief that repeated reading does improve reading comprehension. It is difficult to pinpoint whether or not comprehension gains were related to increases in reading rate. It seems logical to suggest that information picked up on the first reading does not have to be processed on the second or third reading. Thus processing space in the memory is freed up to allow the reader to consolidate the ideas in the text. The three suggestions given by Perfetti and Lesgold (1979) to increase the working memory capacity by developing long-term memory (fluency training, uncued and cued recall), speed and automaticity (repeated reading), and reading in thought units (segmented text) were followed in this study and appeared to have an influence on the comprehension results, notwithstanding that the repeated reading of segmented text

was superior to repeated reading itself only for increasing cued recall scores.

Cueing students to read for comprehension has been suggested in the repeated reading literature as a method for increasing understanding. In this study subjects were required to retell the story and answer questions about ideas that were omitted; doing so appeared to benefit comprehension greatly. However, as cueing was not an independent variable, this conclusion cannot be verified. A recent study (O'Shea, Sindelar & O'Shea, 1985) demonstrated that during repeated reading, readers cued to fluency read faster but comprehended less than those cued to comprehension.

When the comprehension results were analyzed according to reading level no significant differences were seen. In terms of interaction between treatment and student reading achievement level, rereading segmented text was a superior method to rereading regular text for at grade level students when measured by cued recall scores, while rereading alone and rereading segmented text had superior results compared to scores of the control group, but not to each other for below grade level readers.

These effects are similar to those found in a recent study on the use of segmented text by Taylor, Wade, and Yekovich (1985). Poor readers were helped more by rereading non-phrased material, while good readers did better rereading phrased or segmented text. In contrast, O'Shea and Sindelar (1983) found that in a non-repeated reading situation both poor and good students comprehended better when reading segmented text. O'Shea and Sindelar may have had more positive results

with segmented text because comprehension was tested using cloze passages which were similar to the original segmented text. Taylor and her colleagues as well as this investigator used uncued and cued recall to measure comprehension, measures not linked as closely to the text.

Conclusions

In conclusion, the results of this investigation suggest that repeated reading is an appropriate technique that can successfully improve word recognition accuracy, automaticity or rate, comprehension, and instructional reading levels for at and below grade second grade readers. Rereading segmented text was superior to rereading regular prose only for at grade level readers and only in terms of cued recall.

As could be predicted, compared to below grade level readers, at grade level readers had significantly higher reading rates while word recognition accuracy was close to significant. The only meaningful interaction between reading level and treatment was in cued recall where scores for rereading segmented text were significantly higher for grade level students than rereading regular text. These results suggest that preparing and having students read segmented text is not worth the extra effort entailed. The repeated reading of text segmented into pausal units deserves further study.

Educational Implications

The following implications are offered on the basis of the present investigation:

1. Repeated reading is an effective technique for improving both reading fluency (word recognition accuracy and automaticity or rate) and comprehension (uncued and cued recall). While the subjects of this

study were second grade students, this teacher-researcher believes that this instructional procedure can be used not only with primary and intermediate grade level students (1 to 3 and 4 to 6) but also with remedial students at the junior high school level and higher. Further study in this regard is required, however.

2. For at grade level readers, repeated reading using segmented text was superior to repeated reading using regular text for improving cued recall. The segmentation of text would seem appropriate as a supplement to basic instruction to highlight thought units especially for at grade level developmental readers. For small group use, the preparation of segmented passages is manageable, and the passages, once arranged, can be easily reused. Passages can be segmented without retyping. Noun, verb, and object phrases, for example, can be separated by vertical lines (as Allington, 1983, does) or underlined. Also, children could be asked to do their own phrasing of regular text and this could be reviewed by a teacher or a volunteer before the reading of the passage.
3. Cueing readers for comprehension and asking students to both retell what they remember from reading and answer questions appear to improve understanding of the passages. This procedure is simple, takes little time, and is easy to implement.
4. The three techniques mentioned (repeated reading, and for at grade level developmental students the rereading of segmented text, plus cueing to ensure comprehension) are valuable for classroom teachers as well as resource teachers. These techniques can be employed easily by teachers or resource teachers with the help of other students, aides,

and volunteers.

Concerns

The following concerns need to be taken into consideration when interpreting the findings of this research:

1. The scores for the posttest came from different levels of the Standard Reading Inventory (SRI) (the students' post-treatment instructional levels) rather than one uniform passage.
2. No delayed posttest was given to indicate long-term comprehension gains.
3. The composite index, not used in other repeated reading studies, was developed by the investigator and therefore has not been subject to validation through other research.
4. The method of designating subjects as at and below grade level readers in which subjects were rank-ordered according to performance on the Gates-MacGinitie Reading Test did not lead to a clear delineation between the reading ability levels of the two groups. Leaving a distinct gap between scores instead of listing students in a continuum would have led to a better separation of ability levels.
5. In the cases of word recognition accuracy (for level), number of main ideas (for treatment), and cued recall (for treatment comparing RR and C groups), results approached significance. The use of larger sample sizes would add more statistical power to the analysis. Findings may have been more definitive had more subjects participated.
6. While compared to many repeated reading studies this study took place over a relatively long period of time (10 weeks). Perhaps a longer treatment duration was needed. Dahl (1979), for example,

continued treatment over the span of a complete school year.

7. In this study the text for the RR-S condition was divided into pausal units according to R.E. Johnson's criteria (1970). Results may have been different had the text been chunked into phrasal units (that is, noun, verb, and object phrases). It was not until the third grade level when the text was more sophisticated that segmented text was clearly different from naturally occurring text.

8. This study was limited to analyzing the oral reading and comprehension performance of 30, second grade, at and below grade level readers who represent a middle-class socio-economic level. Subjects were from two classrooms in a suburban Winnipeg elementary school, and constituted a convenient sample. They were not drawn randomly. The findings cannot be generalized beyond this setting.

Recommendations for Further Research

Suggestions for further research based on the results of this study are offered as follows:

1. It would be preferable for subjects in future research to be tested with one level of the Standard Reading Inventory (McCracken, 1966) for the pre-test and an alternate form at the same level for the posttest. When all subjects receive the same pre- and post-treatment passages the need for calculating composite indices could be eliminated.
2. A delayed posttest could be employed to investigate the effects of repeated reading on oral reading and comprehension after a time delay.
3. With regard to designation of ability groups (at and below grade level readers), future research should operationally define good and poor readers so that there is a clear delineation between the groups

according to reading ability levels.

4. In this study, the repeated rereading of segmented text was significant in only one area of comprehension compared to rereading regular text. The repeated reading of segmented text is deserving of further study to clarify whether both at or below grade level students will achieve higher comprehension gains when reading segmented text and to investigate whether rereading segmented text facilitates immediate comprehension of the text or leads to long-term comprehension gains. Taylor, Wade, and Yekovich (1985) have the only published study which compares repeated reading and the repeated reading of segmented text. The authors combined variations of phrasing (segmented text) and repeated reading into four conditions. Rereading improved both cued and uncued recall, while phrasing had a positive effect on oral reading performance. Although the results in both studies are not clear-cut, reading segmented text shows promise for enhancing comprehension. The practice might be carried out over a longer term.
5. Studies involving segmented text at the primary level could be in phrasal units, rather than pausal units.
6. Further research could be carried out at different grade levels to investigate whether age affects repeated reading results.
7. This study did not examine attitude change although attitude change toward reading is an important aspect of repeated reading. Neill (1980) mentioned that 75% of his students wished to do repeated reading again and Rashotte and Torgesen (1985) found that the same percentage of subjects preferred repeated reading over the same amount of non-repetitive reading. Change in attitude could be examined using

assessment measures such as those espoused by Dryden (1982), and Estes (1971). Interesting non-test approaches that could be included are student interviews, observation, student logs, or frequency counts of books or passages read (Levine & Singleton, 1981). Attitude should be measured in future research.

8. O'Shea, Sindelar, and O'Shea (1985) researched cueing for comprehension in conjunction with repeated reading and found that it had a positive effect. In the present study students were cued to read for comprehension and were asked for oral retellings as part of the instructional procedure for both repeated reading and the repeated reading of segmented text. Further research could empirically investigate the value of cueing by comparing repeated reading only with repeated reading plus cueing and recall. Another alternative could be repeated reading with recall, repeated reading of segmented text, and repeated reading with both segmented text and recall.
9. Rashotte and Torgesen (1985) recently investigated repeated reading compared to the same amount of non-repetitive reading. They found that repeated reading practice was more effective for speed than the equivalent amount of non-repetitive reading only if there were a high number of shared words in the passage. In their study, gains in comprehension performance were not significant. It would be valuable to replicate this study but over a longer term and employing overall posttests, rather than daily performance measures.
10. Using a qualitative rather than a quantitative design, the teacher-researcher could ask some of the following questions: Could the enhanced performance of the repeated reading subjects be attributed

to the relationship established between the tutor and tutee, or to the graph as a motivating factor? Was it the fact that the children realized that they were "special" in that they were participating in a research study (the Hawthorn effect)? Was the treatment more effective for some kinds of learners than others? For example, one student who was very nervous was the only participant in both repeated reading groups to show no improvement at all. Practical advice for further teacher or action research is offered by Allen et al. (1988), Chall (1986), and Mohr and MacLean (1987).

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APPENDICES

APPENDIX A
SAMPLE OF REPEATED READING TEXT

BINGO

Bingo was a lazy boy. He never wanted to work. All he wanted to do was sleep or watch TV.

"Son," said Bingo's mother. "Pick your things up off the floor. Don't be so lazy."

Bingo thought, "Every day Mom tells me that! How can I pick up my things and not work too hard?"

Bingo thought and thought. "A magnet," cried Bingo. "Maybe I can use a magnet to pick up my things. But a magnet won't pick up my clothes. It will only pick up iron or steel."

Then Bingo had an idea. He said, "I'll put big,* steel paperclips on all my clothes. Then the magnet will pick them up."

* indicates 100 words

APPENDIX B
SAMPLE OF SEGMENTED TEXT

BINGO

Bingo was a lazy boy.

He never wanted to work.

All he wanted to do was sleep or watch TV.

"Son," said Bingo's mother.

"Pick your things up off the floor.

Don't be so lazy."

Bingo thought, "Every day Mom tells me that!

How can I pick up my things and not work too hard?"

Bingo thought and thought.

"A magnet," cried Bingo.

"Maybe I can use a magnet to pick up my things.

But a magnet won't pick up my clothes.

It will only pick up iron or steel."

Then Bingo had an idea.

He said, "I'll put big,* steel paperclips on all my clothes.

Then the magnet will pick them up."

* indicates 100 words

APPENDIX C
SAMPLE TEMPLATE FOR SCORING
SRI NUMBER OF IDEAS AND MAIN IDEAS

A RABBIT (Level 2.0, Form B)

- * 1. A rabbit was sitting in the garden.
- 2. He was eating some lettuce leaves.
- 3. He heard a noise
- * 4. and saw Joe coming into the garden.
- 5. Joe had a shovel in his hand.
- * 6. The rabbit looked for a place to hide.
- 7. He wanted to run,
- * 8. but he was too afraid to move.
- 9. Joe picked out a place
- 10. and started digging in the ground.
- 11. The rabbit watched Joe.
- 12. He did not make a sound.
- * 13. Joe did not see the rabbit.

1. indicates an idea

* indicates a main idea

APPENDIX D
ANOVA TABLE

Analysis of Variance on Performance for the Experimental and
Control Groups and At and Below Grade Level Readers

ANOVA	Source	df	SS	F	p
ANOVA for change in level	Treatment	2	9.40	14.70	0.00
	Level	1	0.30	0.94	0.34
	Trt X Lev	2	0.71	1.11	0.34
ANOVA for word recognition	Treatment	2	32.47	1.26	0.30
	Level	1	38.53	3.00	0.09
	Trt X Lev	2	34.07	1.33	0.28
ANOVA for composite index of word recognition	Treatment	2	91881.25	15.25	0.00
	Level	1	3757.60	1.25	0.28
	Trt X Lev	2	6957.08	1.15	0.33
ANOVA for reading rate	Treatment	2	372.27	0.28	0.76
	Level	1	4762.8	7.22	0.01
	Trt X Lev	2	260.00	0.20	0.82
ANOVA for composite index of reading rate	Treatment	2	46645.68	6.78	0.00
	Level	1	28382.25	8.25	0.00
	Trt X Lev	2	13.00	0.00	0.99
ANOVA for number of ideas	Treatment	2	4669.40	7.32	0.00
	Level	1	294.53	0.92	0.35
	Trt X Lev	2	689.27	1.08	0.36
ANOVA for composite index of number of ideas	Treatment	2	71269.32	16.96	0.00
	Level	1	2430.00	1.16	0.29
	Trt X Lev	2	5398.51	1.28	0.30
ANOVA for number of main ideas	Treatment	2	3326.87	2.66	0.09
	Level	1	168.03	0.27	0.61
	Trt X Lev	2	1998.87	1.60	0.22
ANOVA for composite index of number of main ideas	Treatment	2	83152.50	11.05	0.00
	Level	1	2000.83	0.53	0.47
	Trt X Lev	2	12525.68	1.66	0.21
ANOVA for cued recall	Treatment	2	2001.67	10.01	0.00
	Level	1	0.83	0.01	0.93
	Trt X Lev	2	831.67	4.16	0.03
ANOVA for composite index of cued recall	Treatment	2	102782.60	17.47	0.00
	Level	1	490.05	0.17	0.68
	Trt X Lev	2	9285.73	1.58	0.22

Trt X Lev = Treatment X Level